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Oil and Gas Developments in Pennsylvania in 1966

William S. Lytle
Louis Heyman
Walter R. Wagner

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by William S. Lytle, Louis Heyman,
and Walter R. Wagner

Staff Geologists

PENNSYLVANIA GEOLOGICAL SURVEY

FOURTH SERIES

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CONTENTS

Page

Abstract 1

Introduction 2

Acknowledgments 4

Shallow-sand exploration and development 5

  Shallow-sand gas development 8

  Shallow-sand oil development 8

  Areas of shallow oil and gas activity during 1966 10

Comments on shallow well activity 15

Deep-sand exploration and development 16

  Development in the deep gas fields 22

Outlook for 1967—Deep (Oriskany and pre-Oriskany) 28

Articles on Pennsylvania geology, 1966 29

ILLUSTRATIONS

FIGURES

Page

FIGURE 1. Annual production of natural gas in Pennsylvania .. 4

2. Graph showing shallow well activity, 1950–1966 ... 5

3. Columnar section showing oil and gas sands of western Pennsylvania 9

4. Annual production of crude oil in Pennsylvania 11

5. Crude oil production curve of the Bradford District, Pennsylvania and New York 12

6. Crude oil prices, production, and well completions, Bradford Field 13

7. Sites of important shallow-sand oil and gas activities in 1966 14

8. Drilling activity in Erie and Crawford Counties 17

9. Annual rate of deep sand exploration and development 18

10. Stratigraphy of the Minard Run Oil Co. no. 1 well . 19

11. Deep wells drilled, 1966 20

TABLES

Pag

TABLE 1. Deep and shallow well completion summary, Pa., 1966 . . . .
2. Production in Pa., 1966 . . . .
3. Shallow-sand well completions in Pa., 1966 . . . .
4. Shallow-sand wells deepened in Pa., 1966 . . . .
5. Oil wells and crude oil production in Pa. by counties, 1965 1
6. Summary of deep well completions in Pa., 1966 2
7. Discoveries in Pa., 1966 2
8. Exploration failures in Pa., 1966 2
9. Deep gas production in Pa., 1966 3
10. Summarized records of deep wells drilled in Pa., 1966 3
11. Deep-well samples collected 1965, 1966 5

OIL AND GAS DEVELOPMENTS IN PENNSYLVANIA IN 1966

by William S. Lytle,
Louis Heyman and Walter R. Wagner

ABSTRACT

Exploratory drilling in Pennsylvania in 1966 resulted in the discovery of three deep Oriskany sandstone pools, one shallow Upper Devonian gas field, and one shallow Upper Devonian oil pool.

Development drilling extended several oil and gas fields and pools. As in the previous three years, development drilling continued in the Youngsville-Sugar Grove Oil Field of Warren County. There were 104 oil wells drilled in the field during 1966. Production for the field was down slightly below the 1965 production of 1600 barrels of crude oil per day. Shallow areas being developed in 1965 continued to be developed. They are: southeastern section of the Corry quadrangle, Warren quadrangle; Warren area; Tionesta-Pleasantville area and Big Run area in Clearfield, Indiana, and Jefferson Counties. Operators continued to develop the Medina (Lower Silurian) in Erie and Crawford Counties. The Bushnell-Lexington Pool in Erie County had 49 gas wells drilled within its limits while 19 gas wells were drilled in the Pierce Pool in the same county.

The three deep Oriskany sandstone discoveries are: the Kidders Corner and the Springfield Pools in Erie County and the Seven Springs Pool in Somerset County.

There were 734 new wells drilled and 34 wells deepened during 1966. Of the 768 new and deepened wells, 694 were in proven fields and 74 were exploratory tests. Of the 694 proven field wells, 613 were drilled outside of the underground gas storage, stratigraphic tests, and secondary recovery projects, 73 were drilled in secondary recovery projects, 6 in gas storage and 2 as stratigraphic tests. Of the 613 development wells outside secondary recovery projects, gas storage and stratigraphic tests, 240 were oil wells, 303 were gas wells, and 70 were dry holes. The total footage drilled during the year was 1,764,753 feet.

The 74 exploratory tests drilled a total of 278,305 feet of hole. Of the 74 tests, 28 were successful and 46 were dry, giving a success ratio of 1 in 2.6.

Crude oil production during 1966 amounted to 4,337,000 barrels which is down from the 1965 production of 4,855,000 barrels. Proved oil reserves as of December 31, 1966 were estimated at 72,429,000 barrels. Natural gas produced totaled 91,365,000 MCF as compared with 82,662,000 MCF in 1965. Gas reserves were estimated at 1,350,576,000 MCF at the end of the year. The amount of gas stored in Pennsylvania's reservoirs on December 31, 1966 was 501,024,000 MCF and this is included in the above reserve figure. The amount of distillate produced in 1966 was 76,000 barrels.

Seismic activity in the Commonwealth was up five percent from 1965. Seismic crews logged 68 weeks during the year.

INTRODUCTION

Pennsylvania's 1966 oil and gas developments are summarized in this publication. The deep-well (those which reached rocks of Middle Devonian age or older) skeletal logs are shown in Table 10. For those deep wells drilled prior to 1950 the skeletal logs and other information on the Commonwealth's oil and gas activities are to be found in Bulletin M-31; similar information for the 1950 to 1954 period was published in Bulletin M-39 and for the 1955 to 1959 period in Bulletin M-45. For the years 1960 through 1965 this information was published annually in Progress Reports 158, 160, 165, 166, 168, and 172 of the Pennsylvania Bureau of Topographic and Geologic Survey. Oil and gas developments of the shallow sands (Upper Devonian or younger) are described in Bulletin M-45 and Progress Reports 135, 139, 143, 144, 147, 150, 151, 154, 155, 157, 158, 160, 166, 168, and 172.

A list of deep-well samples on file with the Survey was published in the Survey's "Catalogue of Deep Well Samples" (Information Circular 16.) Supplemental lists were published in Progress Reports 157, 158, 160, 165, 166, 168, and one is presented in Table 11 of this report. Many shallow-well samples are also on file with the Survey. A list of the shallow-well samples is in preparation for publication.

Deep well drilling was up 23 percent in 1966 from that in 1965. Of the 151 deep wells (Middle Devonian or older) drilled during the year, 32 were wildcats, 4 more than were drilled in 1965. One of the wildcats became the deepest well drilled in the Appalachian Basin when it was drilled to a total depth of 18,834 feet. Erie County in northwestern Pennsylvania had the greatest density of deep drilling with 84 completions during the year.

Drilling activity in the shallow-sand (Upper Devonian or younger) territory of western Pennsylvania decreased 23 percent in 1966. About the same number of wells were drilled during both 1965 and 1966, but the method of collecting the statistics in 1966 was changed from that of previous years and many of the wells completed during 1966 were not reported. There were 583 shallow-sand wells drilled and 34 wells deepened during 1966.

The price of Pennsylvania grade crude oil was increased 15 cents on March 1, 1966. The crude oil production during 1966 in the Commonwealth amounted to 4,337,000 barrels while the natural gas production totaled 91,365,000 MCF (thousand cubic feet). The proved recoverable reserves on December 31, 1966 were 72,429,000 barrels of crude oil (corrected figure) and 1,350,576,000 MCF of natural gas (includes 501,024,000 MCF in storage). The amount of distillate produced in 1966 was 76,000 barrels. The natural gas and distillate figures are those published by the

American Gas Association while the crude oil figures source is the American Petroleum Institute.

A classification of the wells, exclusive of those drilled for gas-storage and secondary recovery purposes is given in Table 1, and oil and gas production is shown in Table 2. Figure 1 shows the annual gas production in the State since 1882.

Table 1.—*Deep and shallow well completions summary, Pennsylvania, 1966**

Completions	*Oil*	*Gas*	*Dry*	*Total*	*Percent Successful*
Exploratory tests................	6	22	46	74	38
Development wells*..............	240	303	70	613	89
Totals......................	246	325	116	687	83

*Does not include wells drilled in connection with underground gas storage or secondary-recovery operations.

The Pennsylvania Game Commission leased Tracts 86 B-1 to 86 B-6 totaling 1459.2 acres in Warren County at a bonus of $5,117.00. At the end of 1966 there were 22 active leases on their land totaling 13,722.5 acres. Twenty-three wells were producing on 14 leases. Consolidated Gas Supply Corporation drilled a well on Tract 195 A during 1966 in Jefferson County having an open flow of 919 MCFGPD after fracturing.

At the present time the Pennsylvania Department of Forests and Waters has leased 94,809 acres of State Forest lands for oil and gas exploration and development. In 1966, rental and royalty payments relative to oil and gas exploration and development on State Forest lands resulted in a total income of $397,640. Royalty payments through December 31, 1966 amounted to $213,133 for 2,416,214,000 cubic feet of gas and 2,692 barrels of oil produced on Department lands. Rental payments for the same period totaled $172,900 for gas storage, pipeline rights of way, compressor and pumping stations, and seismic surveys. No Department lands were leased in 1966 for oil and gas exploration. Two deep wells were drilling on State Forest lands in 1966. One, mentioned previously, was the Number

Table 2.—*Production in Pennsylvania, 1966*

	1965	*1966*	*Cumulative total to 12/31/66*	*Reserves 12/31/66*
Oil (bbls.).....	4,855,000	4,337,000	1,252,441,000*	72,429,000*
Gas (MCF).....	82,662,000	91,365,000	8,192,534,000*	1,350,576,000**

*Corrected.
**Includes 501,024,000 MCF in storage.

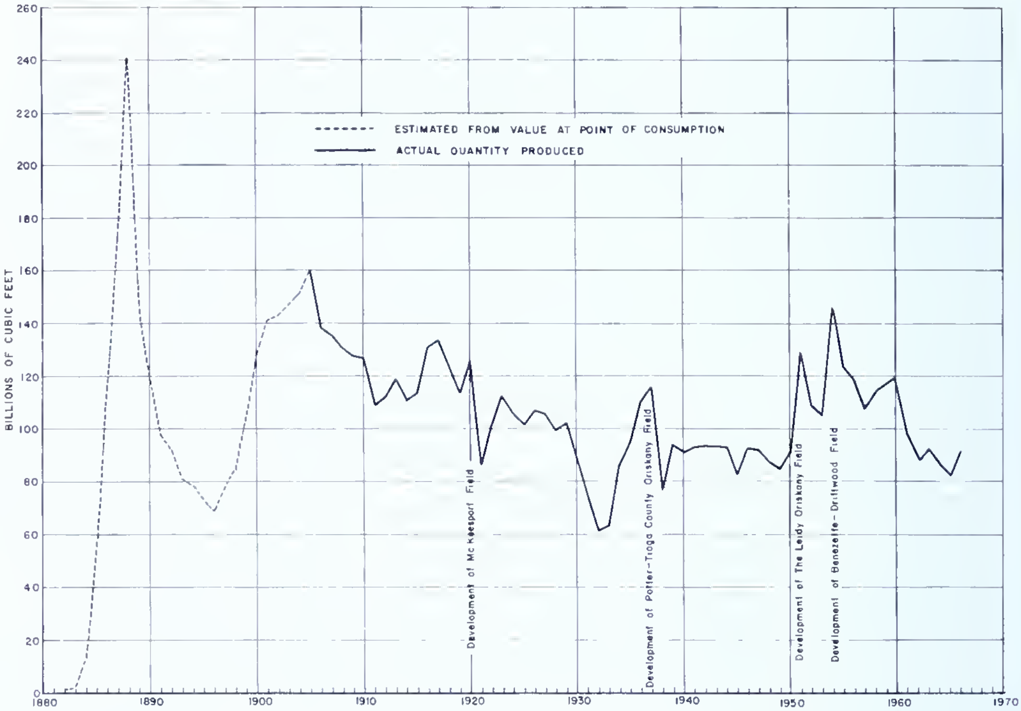


Figure 1. Annual production of natural gas in Pennsylvania.

1 Tract 129 in Potter County, completed at a total depth of 18,834 feet and was plugged back to 6,475 feet to be used as a gas storage well in the Leidy gas storage field. The other well is being drilled by Parsons Brothers, Number 1 Tract 136 in Tioga County, and will not be completed until sometime in 1967.

Two seismic survey permits were issued in 1966 by the Department to traverse approximately 917 miles of State Forest lands. The traverses partially evaluated subsurface conditions underlying Negro Mountain anticline in Somerset County and an undefined structure in Butler County.

Seismic activity in the Commonwealth amounted to a total of 68 crew weeks—up 5 percent over the 65 crew weeks logged in 1965.

ACKNOWLEDGMENTS

In the preparation of this review, the writers acknowledge the cooperation of the Bradford District Producers Association, the Northeastern Gas and Oil Scouts, and the following Commonwealth agencies: Game Commission, Department of Forests and Waters, and Department of Mines and Mineral Industries. Virginia Fairall of the Pennsylvania Bureau of Topographic and Geologic Survey drafted the illustrations and assisted in compiling the data.

SHALLOW-SAND EXPLORATION AND DEVELOPMENT

Exploration and development of shallow-sand horizons continued at approximately the 1965 pace. Figure 2 is a graph of the activity of shallow-sand wells drilled between 1950 and 1966.

During 1966 a total of 504 shallow wells were drilled for primary oil and gas production (exclusive of wells drilled deeper and those drilled in connection with underground gas storage and the secondary recovery of oil). This total is 67 wells less than 1965. The total represents only the wells reported. A considerable number of completed wells were not reported. The reported wells drilled in 1966 are categorized as follows: 167 gas wells, 245 oil wells, and 92 dry holes; in addition, 4 gas storage wells, 2 stratigraphic tests, 34 wells drilled deeper (gas, oil and dry) and 73 wells drilled in connection with secondary-recovery oil operations were reported. The total number of shallow wells drilled and deepened in Pennsylvania during 1966 was 617 with a total footage of 1,088,605 feet. This total reported is down 181 wells from those reported in 1965. Table 3 displays the shallow-sand well completions in Pennsylvania exclusive of those drilled in connection with secondary-recovery oil operations and underground gas storage. Table 4 shows the results of deepening 34 shallow wells in 1966. The generalized

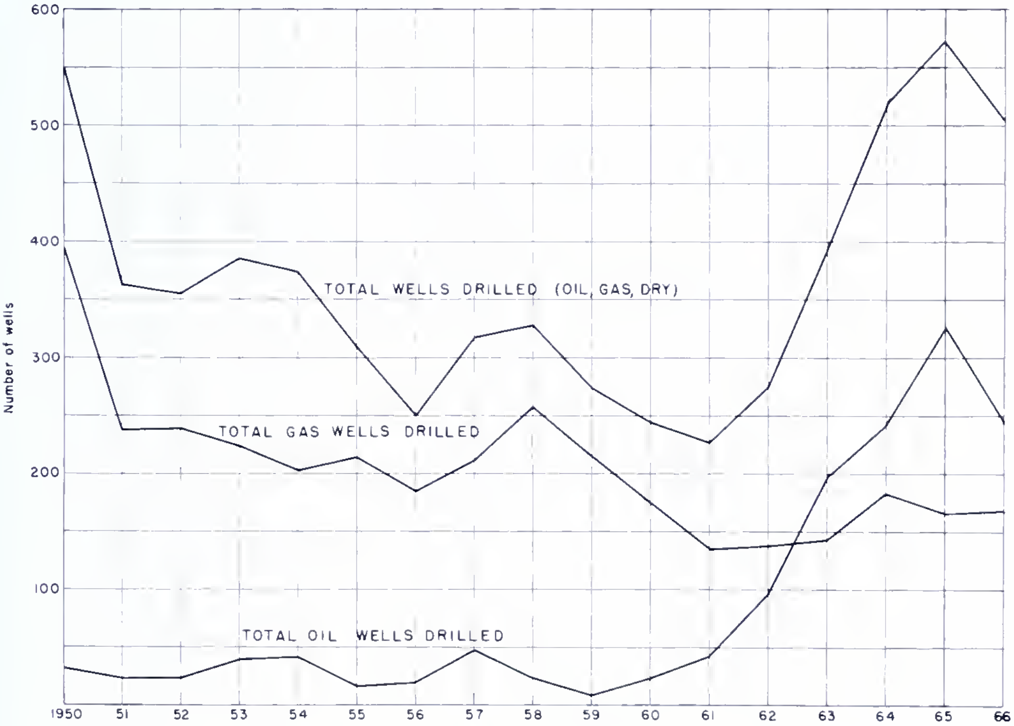


Figure 2. Graph showing shallow well activity in Pennsylvania, 1950–1966.

Table 3.—*Shallow-sand well completions in Pennsylvania, 1966**

	TOTAL		*GAS*			*OIL*			*DRY*	
	No. of Wells	*Aver. Total Depth (Feet)*	*No. of Wells*	*Aver. Init. Open-Flow (MCFPD)*	*Aver. Total Depth (Feet)*	*No. of Wells*	*Aver. Init. Prod. (BOPD)*	*Aver. Total Depth (Feet)*	*No. of Wells*	*Aver. Total Depth (Feet)*
Allegheny	5	2,721	5	1,227	2,721	..	..	..	..	..
Armstrong	32	3,070	30	584	3,080	..	..	..	2	2,915
Butler	8	1,913	4	27	2,316	..	..	..	4	1,511
Cambria	1	4,101	..	..	..	..	..	..	1	4,101
Clarion	13	2,223	9	742	2,160	1	NR	2,654	3	2,270
Clearfield	4	3,439	2	1,304	3,416	..	..	..	2	3,462
Elk	2	2,426	2	31	2,426	..	..	..	..	..
Erie	3	543	2	18	590	..	..	..	1	449
Fayette	1	2,400	1	100	2,400	..	..	..	..	..
Forest	33	1,293	..	..	..	18	12	856	15	1,817
Greene	2	1,532	..	..	..	..	..	..	2	1,552
Indiana	77	3,389	66	1,699	3,460	..	..	..	11	3,055
Jefferson	29	3,501	24	1,503	3,394	..	..	..	5	4,019
McKean	29	1,792	5	111	2,261	19	19	1,590	5	2,431
Potter	6	1,854	1	125	1,700	..	..	..	5	1,884
Venango	67	741	..	..	..	53	32	715	14	838
Warren	168	874	..	..	..	151	47	809	17	1,454
Washington	7	1,815	3	423	2,075	3	1	1,676	1	1,452
Westmoreland	15	3,273	13	915	3,183	..	..	..	2	3,860
Wyoming	2	1,316	..	..	..	..	..	..	2	1,316
Total	504	1,852	167	1,169	3,110	245	39	864	92	2,001

*Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

Table 4.—*Shallow-sand wells deepened in Pennsylvania, 1966*[*]

	TOTAL		*GAS*			*OIL*			*DRY*	
	No. of Wells	*Aver. Amt. Deepened (Feet)*	*No. of Wells*	*Aver. Init. Open-Flow (MCFPD)*	*Aver. Amt. Deepened (Feet)*	*No. of Wells*	*Aver. Init. Prod. (BOPD)*	*Aver. Amt. Deepened (Feet)*	*No. of Wells*	*Aver. Amt. Deepened (Feet)*
Allegheny	1	78	..	..	..	1	NR	78	..	..
Armstrong	10	862	10	218	862	..	..	..	..	..
Butler	1	1,010	..	..	..	..	..	..	1	1,010
Greene	2	412	2	NR	412	..	..	..	..	..
Indiana	15	643	15	641	643	..	..	..	..	..
Jefferson	2	494	1	32	638	..	..	..	1	349
Potter	1	481	..	..	..	..	..	..	1	481
Westmoreland	2	1,477	1	151	1,427	..	..	..	1	1,527
Total	34	723	29	414	729	1	NR	78	4	842

[*] Does not include wells drilled in connection with underground gas storage or secondary-recovery oil operations.

stratigraphic positions of the productive oil- and gas-producing sands in western Pennsylvania are shown on Figure 3. As stated above, the well statistics are only those reported and they should be upgraded for a regional drilling-activity appraisal.

SHALLOW-SAND GAS DEVELOPMENTS

A shallow-sand gas discovery was made during the year when the Hazel Ryan Number 1 well by Sun Oil Company in Fayette County was found dry in the Oriskany and was plugged back to 3,073 feet and completed as a gas well in an Upper Devonian pay. The open flow potential was 700 MCFGPD and resulted in the discovery of the Sandy Creek Field on a minor anticline.

During 1966 there were 167 new shallow gas wells completed in Pennsylvania. This is an increase of two wells over the reported total of 1965.

The average initial open-flow capacity of the 167 gas wells gauged 1,169 MCFGPD compared with the 1,034 MCFGPD of the 165 gas wells drilled in 1965. Most of the gas wells were stimulated by hydraulic fracturing.

The drilling activity in the Big Run area of Indiana and Jefferson Counties continued at the 1965 level. In the Big Run area as well as in Armstrong and Clarion Counties the target horizons are the Speechley, Balltown, Tiona, Bradford and Kane Sands (Figure 3).

SHALLOW-SAND OIL DEVELOPMENTS

A shallow-sand oil discovery was made in McKean County during the year when Smith and Michno drilled the McConnell No. 1 well, found 5 BOPD in an Upper Devonian sandstone and discovered the Cobb Hollow Pool.

Shallow oil completions were down 80 wells in 1966 from the 325 primary oil wells completed in Pennsylvania in 1965. The shallow oil well drilling was confined to the Corry, Youngsville-Sugar Grove, Warren, Bradford, and Tionesta-Pleasantville areas.

Oil production in Pennsylvania averaged 11,880 BOPD in 1966 as compared with 13,302 BOPD for 1965. The total oil production for Pennsylvania during 1966 was 4,337,000 BO or 518,000 BO less than the total oil production of 1965. The daily average production for the Pennsylvania portion of the Bradford Field was 7,085 BOPD in 1966 as compared with 7,730 BOPD during 1965. In the Middle and Southwestern Districts of Pennsylvania the daily average producion in 1966 was 4,795 BOPD as compared with 5,573 BOPD in 1965. Table 5 shows the number of oil wells and crude oil production by counties in Pennsylvania for 1965.

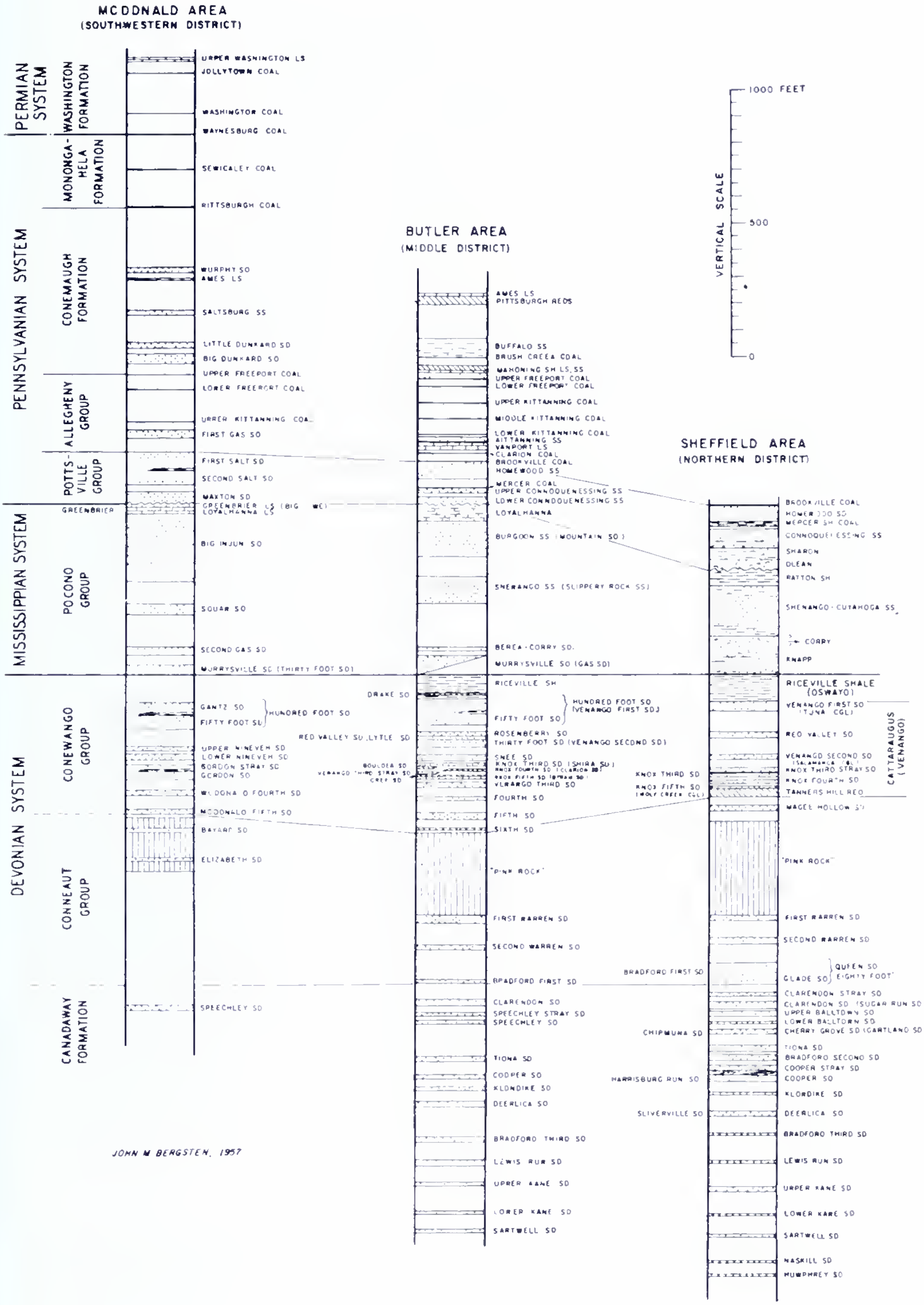


Figure 3. Columnar section showing oil and gas sands of western Pennsylvania.

Table 5.—*Oil wells and crude oil production in Pennsylvania by counties, 1965**

County	*Number of producing oil wells as of 12/31/65*	*Crude oil production (barrels)*
Allegheny	369	111,726
Armstrong	124	10,616
Beaver	127	10,576
Butler	2,246	137,401
Clarion	756	57,792
Crawford	621	22,428
Elk	475	52,434
Fayette	4	469
Forest	893	73,821
Greene	288	52,025
Jefferson	87	3,638
McKean	21,229	2,854,903
Mercer	116	1,435
Potter	354	38,846
Tioga	16	315
Venango	14,097	303,333
Warren	8,043	925,120
Washington	800	159,519
Total	50,645	4,816,397

*Data from Bureau of Statistics, Department of Internal Affairs, Harrisburg, Pennsylvania.

Crude oil prices per barrel were increased 15 cents on March 1, 1966 making the following increases: from $4.48 to $4.63 in the Bradford District, $4.20 to $4.35 in the Venango District, and $3.93 to $4.08 in the Southwestern District.

Figure 4 shows the annual production of crude oil in Pennsylvania from 1959 to 1966. The crude oil production of the Bradford District is shown in Figure 5. The monthly variation in crude oil price, production and well completions is plotted on Figure 6 for the years 1930 to 1966 for the Bradford Field.

AREAS OF SHALLOW OIL AND GAS ACTIVITY DURING 1966

A *brief* survey of the shallow Upper Devonian oil and gas activity for 1966 is listed below. The summary indicates *only* the oil and gas well drilling reported to the Division of Oil and Gas, Pennsylvania Department of Mines and Mineral Industries. Tabulations of wells drilled in the various areas listed below are approximate. The sites are shown on Figure 7.

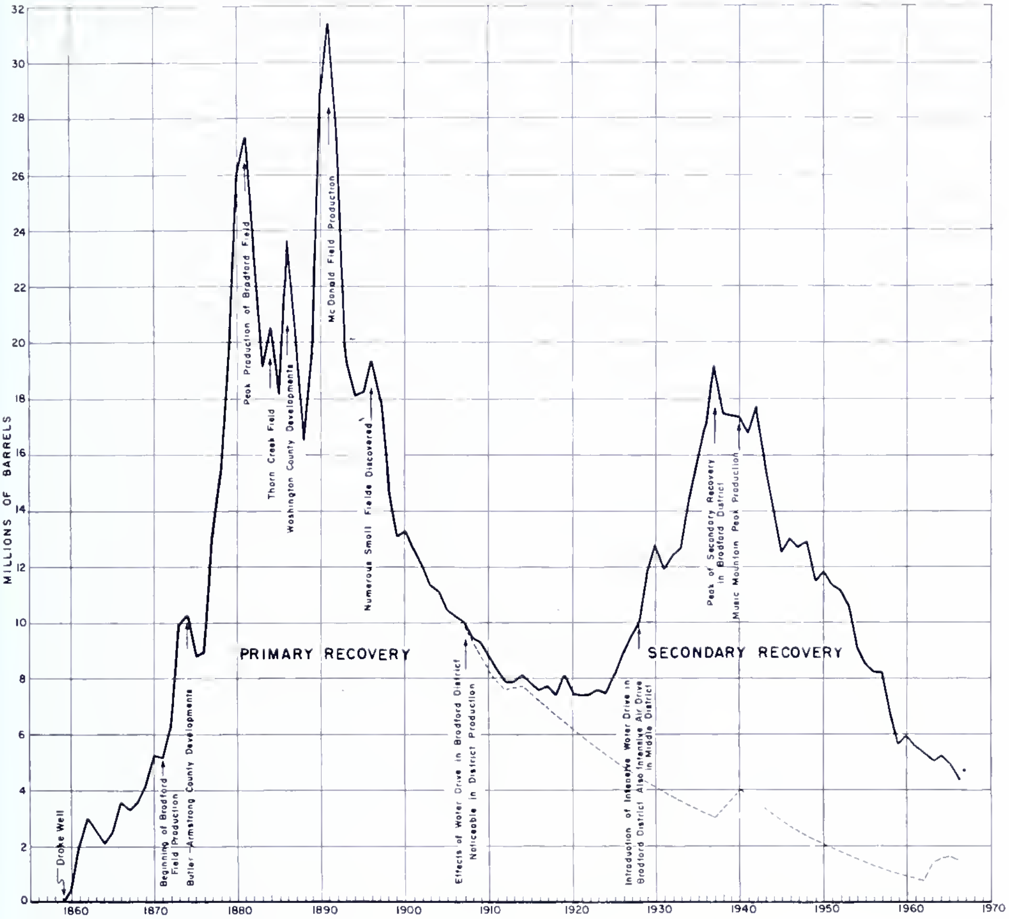


Figure 4. Annual production of crude oil in Pennsylvania.

(1) *Sanford Area (Section 9, Corry Quadrangle, Warren County)*

Fifteen (15) wells have been reported from this area during 1966. The producing oil reservoir is the Venango "Fourth" sandstone. Gas injection projects are underway in the Sanford area but no details are available.

(2) *Youngsville-Sugar Grove Fields (Youngsville Quadrangle, Warren County)*

The development of the Glade sandstone oil reservoir in these fields continues to be the dominant shallow oil activity in the Commonwealth. During 1966 there were 104 Glade completions reported for this area. Several gas injection projects are known to be in operation in these fields but no details are available.

(3) *McKean County Area*

Activity in this area, exclusive of the Bradford Third sandstone, Bradford Field development, is heaviest in the area south and southwest of the city of Bradford. The Bradford Second sandstone oil reservoir is undergoing

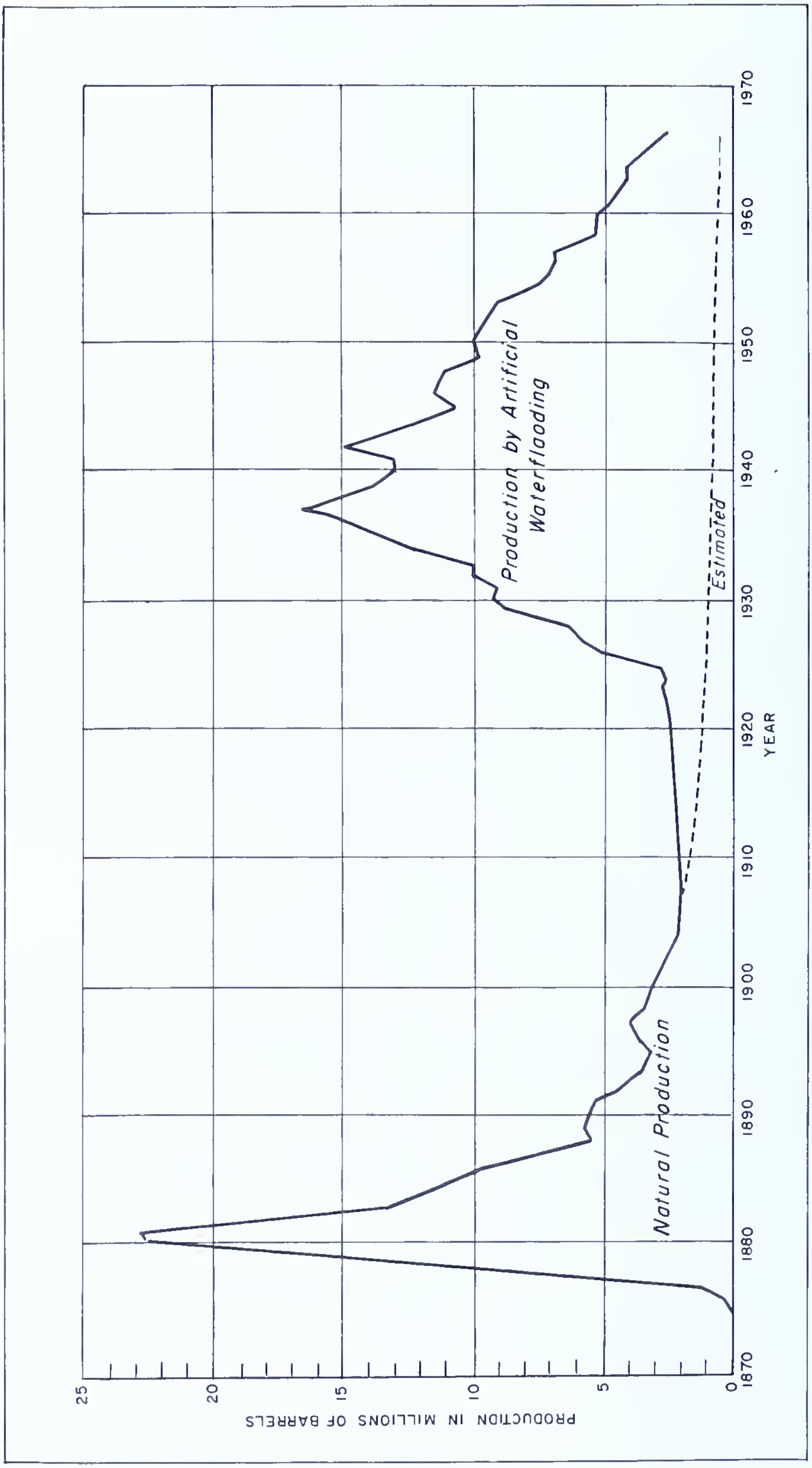


Figure 5. Crude oil production curve of the Bradford District, Pennsylvania and New York (Music Mt. Field excluded).

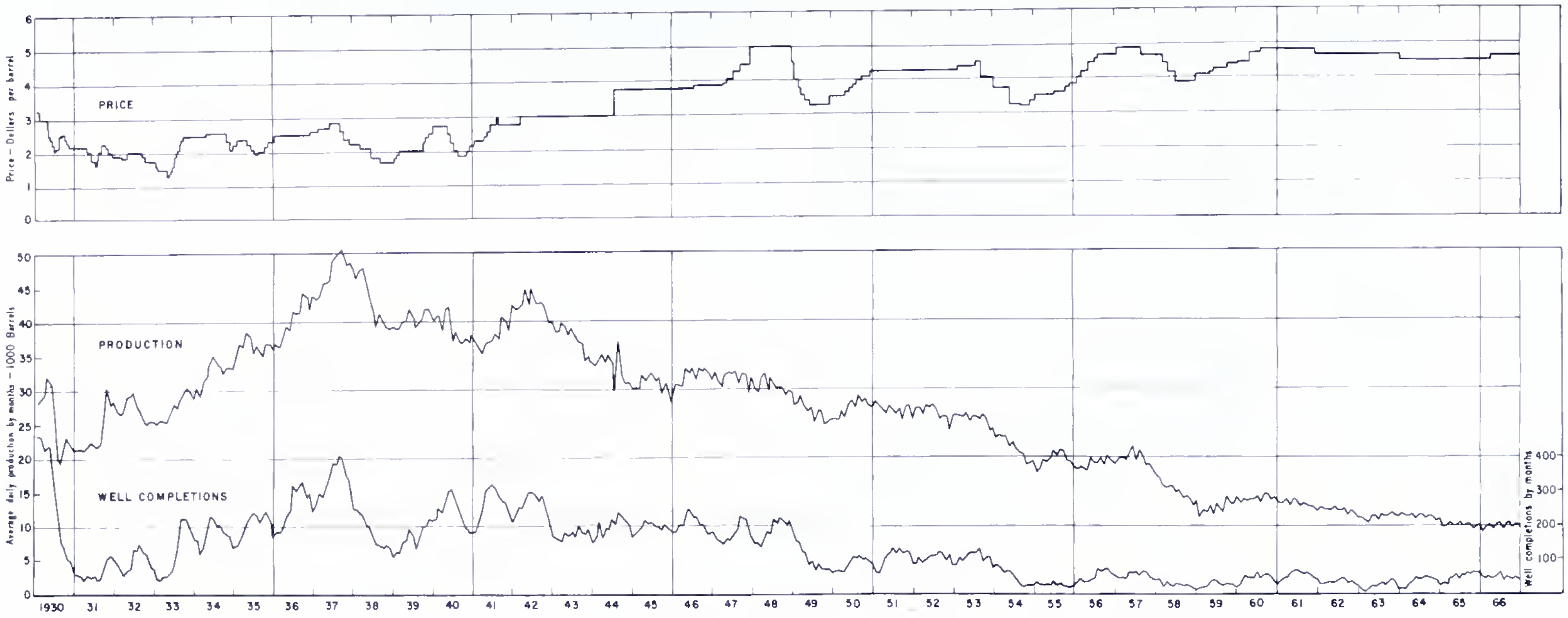


Figure 6. Crude oil prices, production, and well completions, Bradford Field.

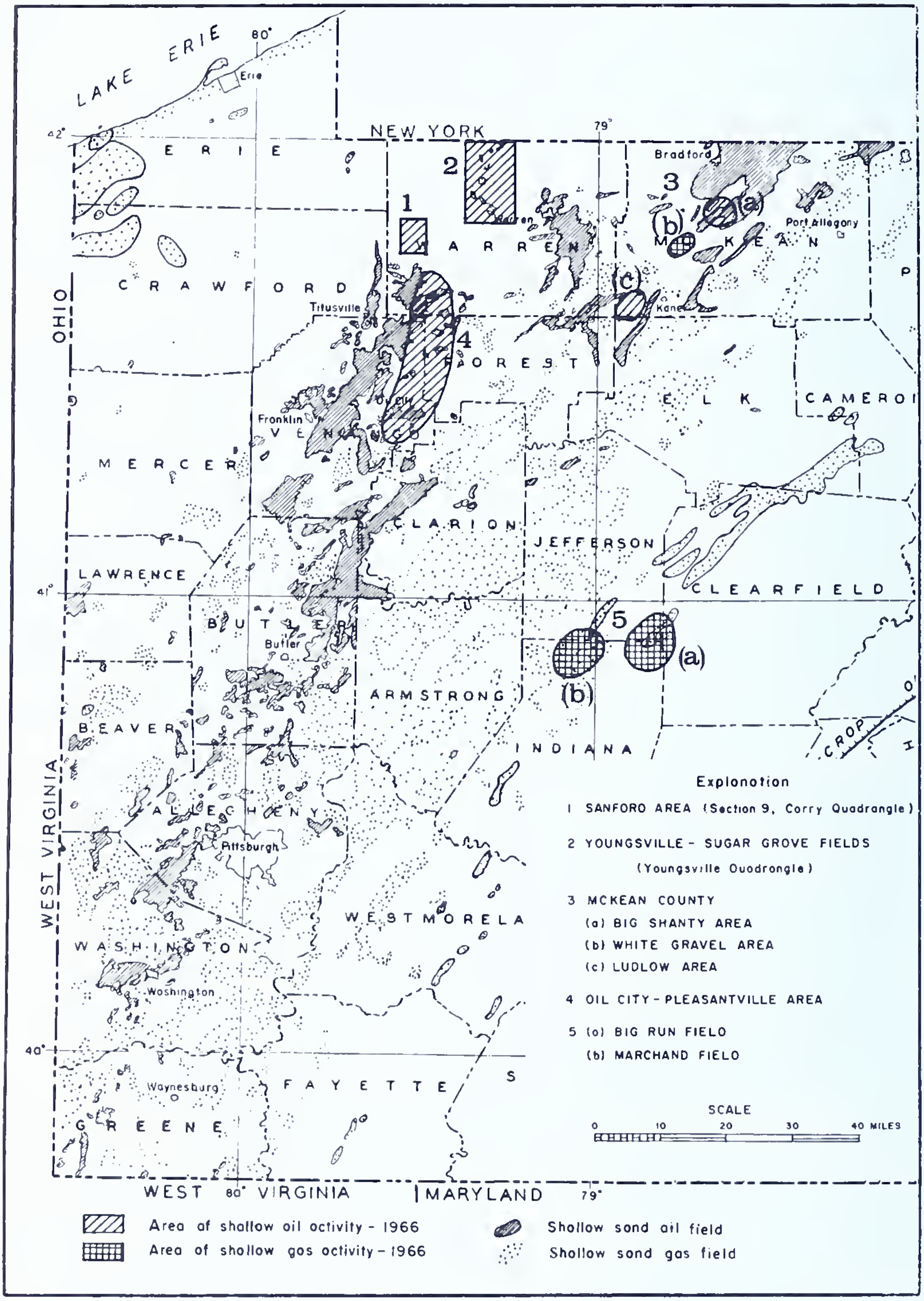


Figure 7. Sites of important shallow-sand oil and gas activities in 1966.

exploration and development in the Big Shanty Area (3a). Farther southwest, exploration and field development continues in the Tiona sandstone gas reservoir of the White Gravel Area (3b) and the Cooper Sandstone oil reservoir of the Ludlow Area (3c).

(4) *Pleasantville-Tionesta Area (Venango and Forest Counties)*

Drilling continued in the area outlined at a rate comparable to 1965. Data reported to the State on completed wells during 1966 indicate some 42 wells were completed for production in 15 separate field areas within the area indicated. This figure is undoubtedly low. Many wells are not reported to the State, and many reports are delayed. Most of the activity was located in the Pithole-Pleasantville field area of northwestern Venango County where 15 wells were completed from the Red Valley, dual Red Valley—Second or Red Valley—Third sandstone. Initial production (pumping) ranged from 5 to 50 BOPD, averaging nearly 30 BOPD per well. Completions are by open hole hydrofracture.

The Red Valley sandstone was involved in 28 completions in this area, the Venango Second in 9 completions, the Venango Third sands (unspecified) in 8 completions, and the Venango First in 2 completions. Other pay zones include undesignated Venango sands in 2 completions and Upper Devonian oil-gas horizons such as the Speechley with 1 completion and 3 completions in the Queen.

(5) *Big Run (5a) and Marchand (5b) Areas (Jefferson-Indiana Counties)*

The Big Run and Marchand Upper Devonian gas fields were the sites of the principal specific shallow gas development during 1966. Most of the gas production was from rocks of the Canadaway Formation namely the Speechley, Balltown, Tiona, Bradford, and Kane reservoirs. Many of the producing wells are multi-pay.

The Big Run Field (5a) has been developing steadily during the past three years. During 1966 there were 29 gas wells reported as completed in this field. The Marchand Field (5b) reported 27 gas wells during the year.

COMMENTS ON SHALLOW WELL ACTIVITY

Production of crude oil from the Bradford Area continues to decline. Very little acreage is left to be converted to water flooding in the Bradford Field. The amount of additional water flood oil from this acreage is not significant and the production from the field will decrease at a rate of approximately 8 percent or more during 1968.

The discovery of new oil reserves in the State has not been enough to offset the declining primary and secondary production except in 1963, 1964 and 1965 when the total annual production for the State remained approximately the same. This was due to the rapid development in the Youngsville, Sugar Grove, Warren, and Pleasantville areas of the Middle District where hydraulic stimulation made it profitable to produce oil from tighter reservoirs. The flush production from these tighter reservoirs has been depleted and once again crude oil production is declining in the Middle District. The average daily production in the Middle and Southwestern Districts was 5,559 BOPD in 1964, 5,573 in 1965 and 4,759 BOPD in 1966, a decline of 14 percent from 1965.

Development drilling in the Youngsville-Sugar Grove area should continue during 1967 but at a slower pace. While in the Kinzua, Kane, Warren, and Oil City—Tionesta areas development drilling should increase during the same period.

The most productive shallow gas field is the Big Run Field in Jefferson and Indiana Counties. As in 1966, development drilling in this field will continue at a brisk pace in 1967.

Continued use of the modern techniques such as logging, notching, hydrofracturing, perforation through casing etc. along with sound geological and engineering data should find economically attractive reserves of oil and gas. It is exceedingly important that accurate and adequate geological and production data be made available to the oil and gas industry through State agencies and by intercompany exchange of information. If the new techniques are not used and good geological and engineering data are not made available, the remaining untouched reservoirs will not be found and the petroleum industry in Pennsylvania will continue its rapid decline.

DEEP-SAND EXPLORATION AND DEVELOPMENT

The 1966 deep-sand exploration in Pennsylvania resulted in the discovery of three new Oriskany sandstone pools. Development drilling extended several gas fields and pools. The drilling of 106 deep wells in Erie and Crawford Counties was the largest number of wells ever drilled in this area in one year (Figure 8). A total of 32 deep wildcats were drilled. A new drilling depth record was established when Consolidated Gas Supply Corp., et al. completed their Tract 129 No. 1 well at a total depth of 18,834 feet in the Upper or Middle Cambrian. The well was drilled in Stewardson Township, Potter County in the Leidy Gas Storage Field. The well became not only the deepest well in Pennsylvania but also the deepest well in the Appalachian Basin. The producing depth record established in 1964, however, still stands. The record is held by the Leo F. Heyn No. 1 well in

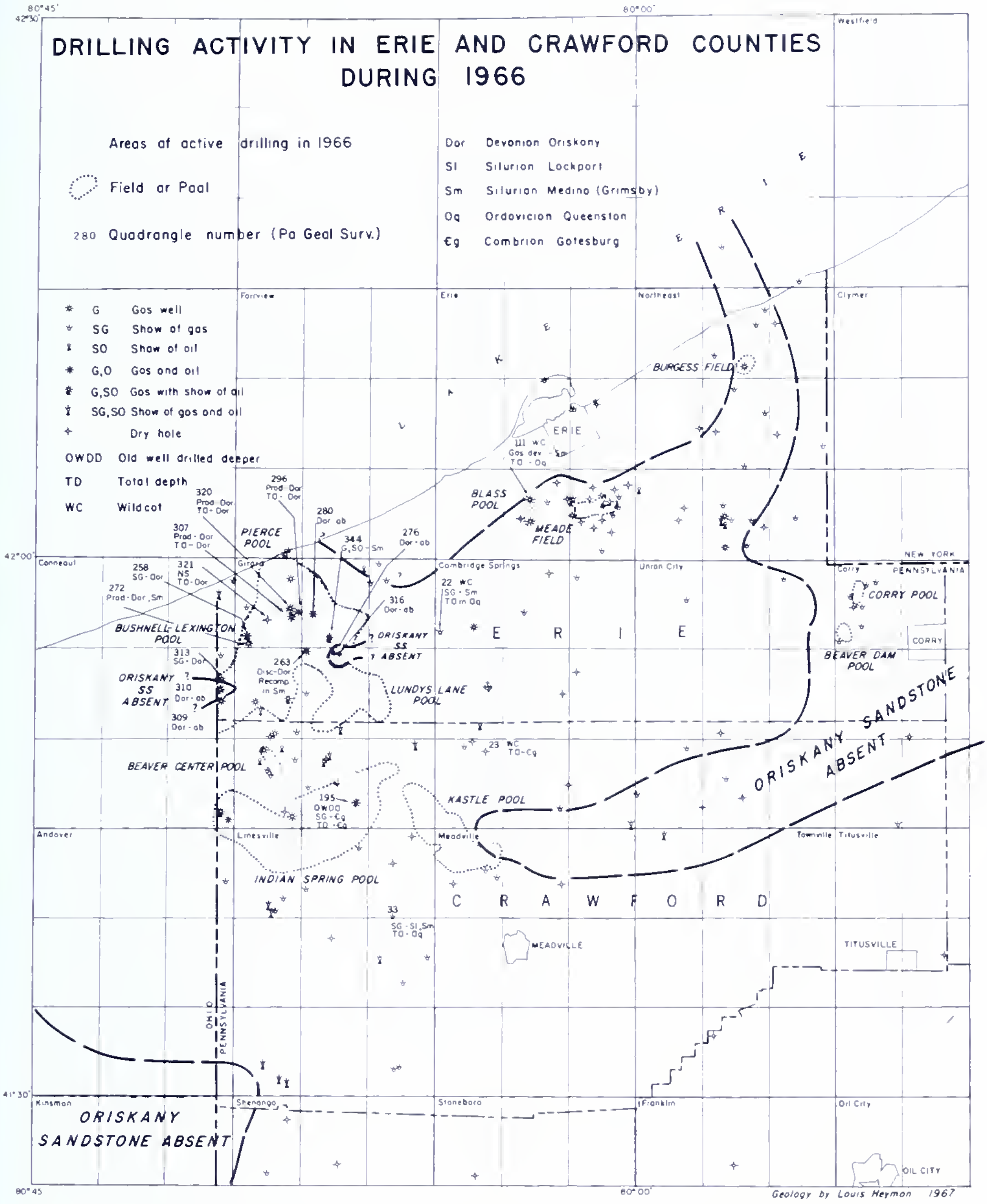


Figure 8. Drilling activity in Erie and Crawford Counties, 1966.

Fayette County which found gas in commercial quantities in the Tuscarora (Medina, Lower Silurian) at a depth of 11,510 feet.

Figure 9 shows the annual rate of deep-sand exploration and development. Figure 10 shows the stratigraphy of the Minard Run Oil Company No. 1 well drilled in Bradford Township, McKean County in 1962. The locations of all the deep wells drilled in Pennsylvania during 1966 are indicated on Figure 11.

At the end of 1966 a total of 2,832 deep wells had been drilled in the Commonwealth. Of the 2,832 deep wells, 1,688 were gas wells, 6 were oil and gas wells, 1,040 were dry holes, 95 were drilled for gas storage, and 3 are being used for waste disposal.

During the year 151 wells were drilled to the Oriskany Formation or deeper, of which 96 were Medina gas wells, 33 were Oriskany gas wells, 20 had shows of gas or were dry holes and 2 were completed as gas storage wells. Of the 151 wells completed during the year, 116 were fractured and 108 of the fractured wells were completed as commercial gas wells.

The deep footage amounted to 676,148 feet. Rotary tools completed 140 deep wells during the year, mostly with air rotary, and 11 were completed with cable tools.

The Bushnell-Lexington Pool in Erie County had 51 wells drilled within its limits during the year; 50 were commercial gas wells. The Pierce Pool in the same county had 19 development gas wells drilled within its borders. In Crawford County 20 development wells were drilled in the Indian Spring Pool; 19 of them were commercial gas wells.

The deep-well completions for Pennsylvania for 1966 are summarized in Table 6. Table 9 shows the 1966 gas production from the Commonwealth's deep gas reservoirs.

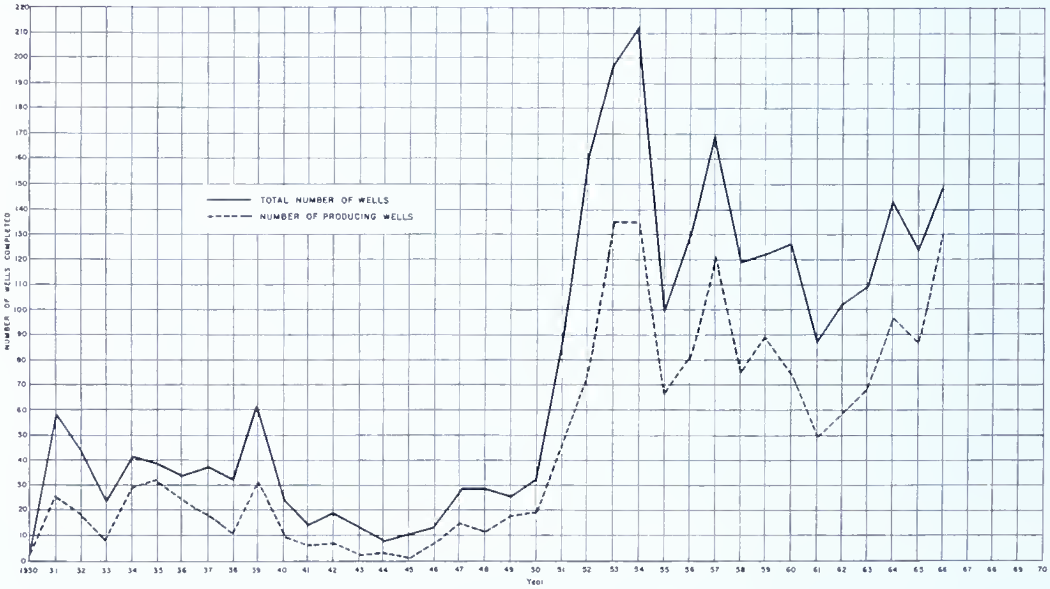


Figure 9. Annual rate of deep sand exploration and development.

MINARD RUN OIL COMPANY No. 1

Bradford Twp., McKean Co., Pa.

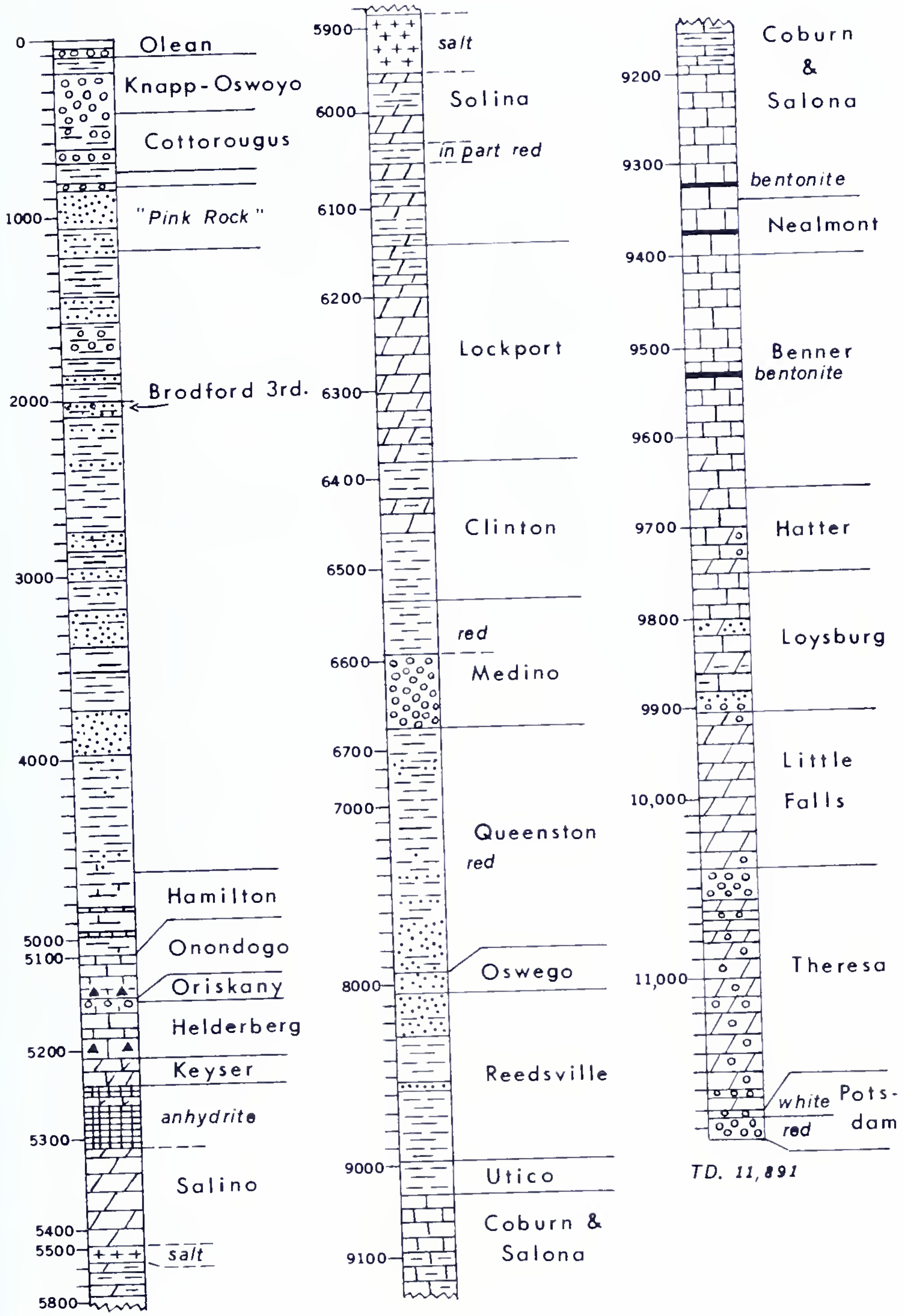


Figure 10. Stratigraphy of the Minard Run Oil Co. no. 1 well.

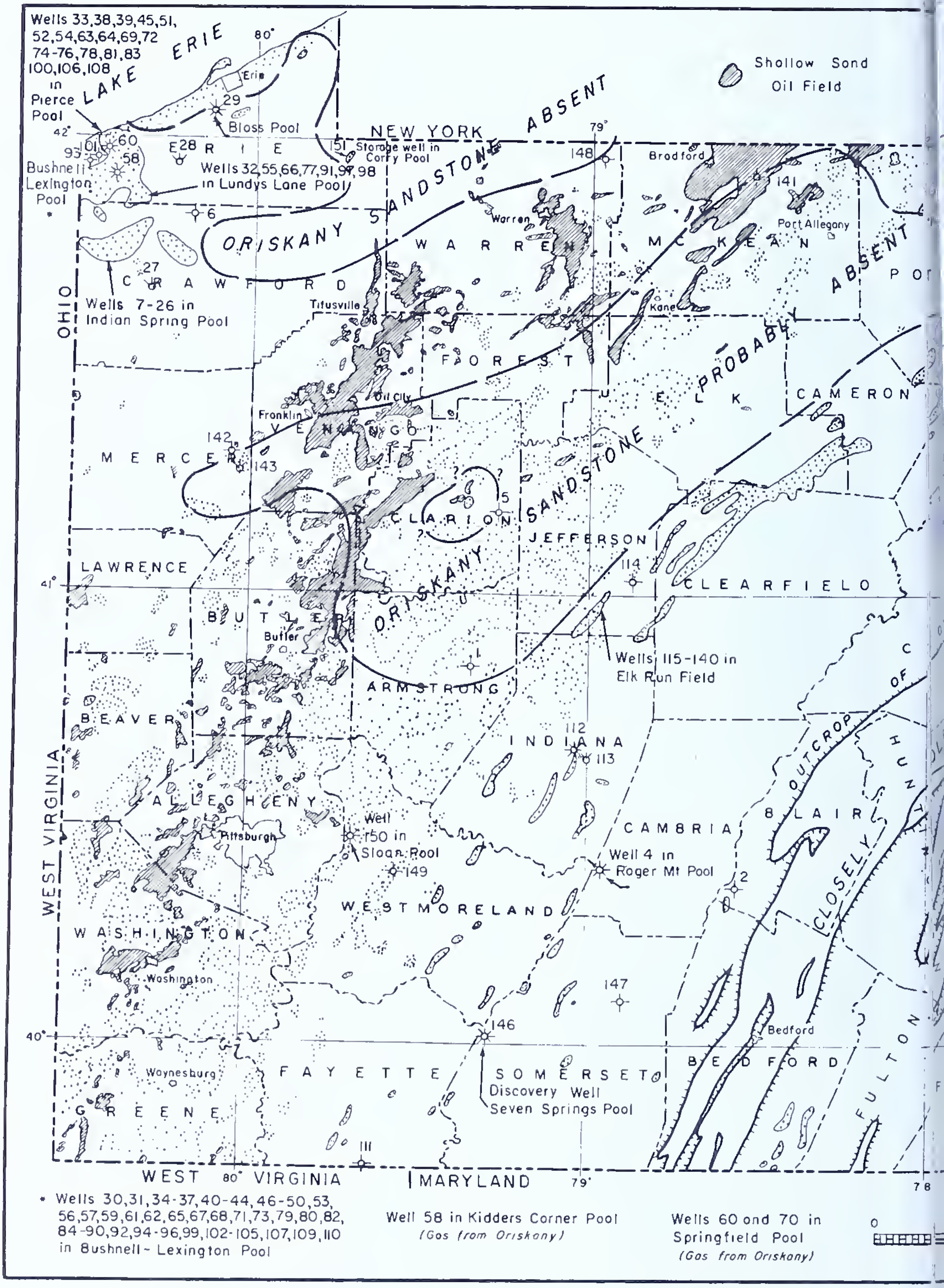
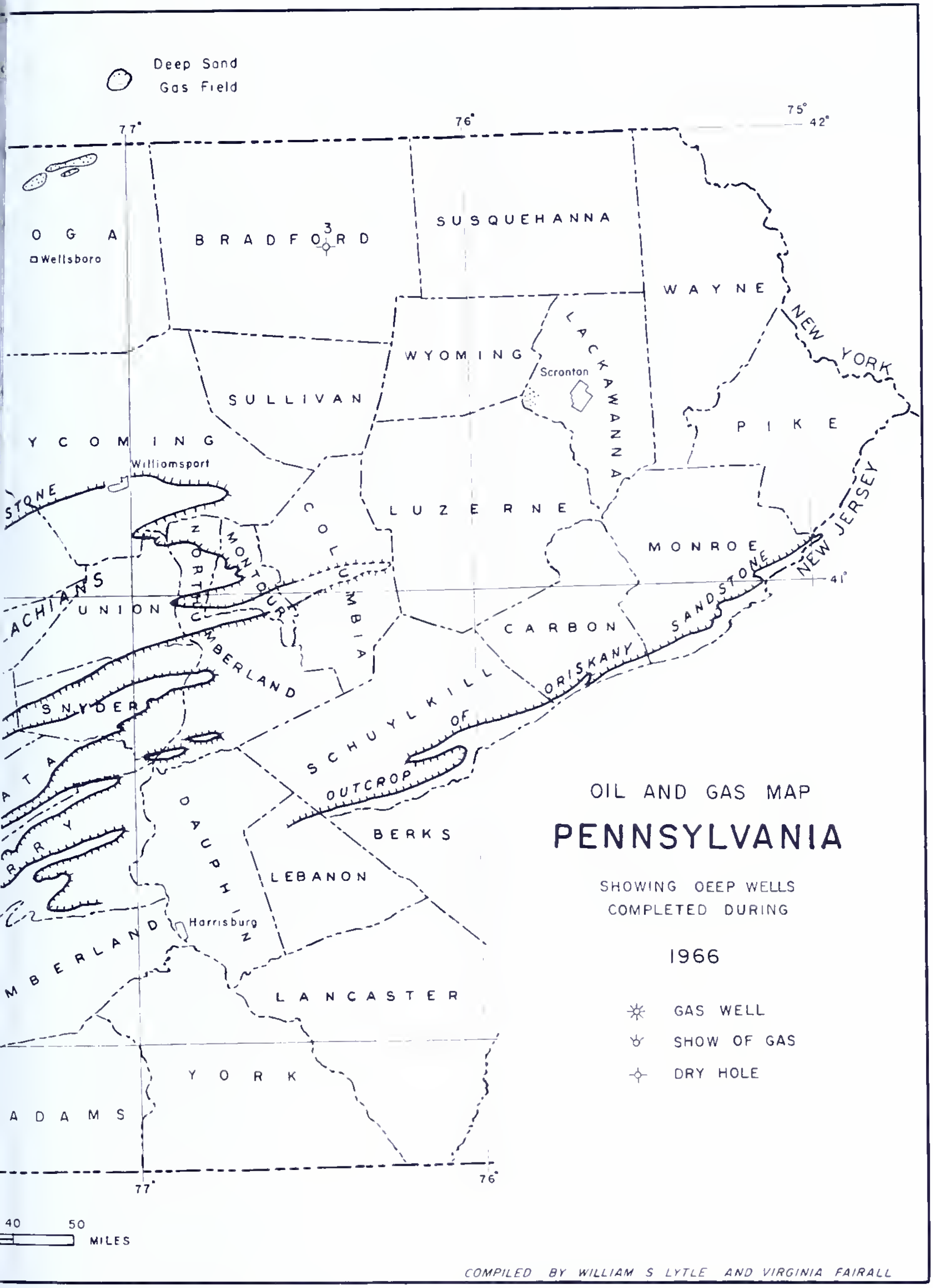

Wells 33,38,39,45,51, 52,54,63,64,69,72 74-76,78,81,83 100,106,108 in Pierce Pool
LAKE ERIE
80°
Erie
29
Bloss Pool
42°
93
101
60
58
E28
Bushnell Lexington Pool
ERIE
151
Storage well in Corry Pool
Wells 32,55,66,77,91,97,98 in Lundys Lane Pool
NEW YORK
ORISKANY SANDSTONE ABSENT
79°
148
Bradford
141
Port Allegany
Shallow Sand Oil Field
6
ORISKANY
27
CRAWFORD
Wells 7-26 in Indian Spring Pool
Titusville
WARREN
Warren
MC KEAN
Kane
ORISKANY SANDSTONE PROBABLY ABSENT
POT
OHIO
FOREST
ELK
CAMERON
Oil City
Franklin
VENANGO
142
143
MERCER
CLARION
5
JEFFERSON
LAWRENCE
41°
114
CLEARFIELD
BUTLER
Butler
ORISKANY
Wells 115-140 in Elk Run Field
ARMSTRONG
1
BEAVER
INDIANA
112
113
OUTCROP OF
CENTRE
HUNTINGDON
BLAIR
ALLEGHENY
Pittsburgh
Well 150 in Sloan Pool
149
CAMBRIA
Well 4 in Roger Mt Pool
2
CLOSELY
WEST VIRGINIA
WASHINGTON
Washington
WESTMORELAND
147
146
40°
Bedford
Waynesburg
GREENE
FAYETTE
SOMERSET
Discovery Well Seven Springs Pool
BEDFORD
FULTON
111
WEST 80° VIRGINIA
MARYLAND
79°
78
• Wells 30,31,34-37,40-44,46-50,53, 56,57,59,61,62,65,67,68,71,73,79,80,82, 84-90,92,94-96,99,102-105,107,109,110 in Bushnell - Lexington Pool
Well 58 in Kidders Corner Pool (Gas from Oriskany)
Wells 60 and 70 in Springfield Pool (Gas from Oriskany)
0

Figure 1.


Deep Sand Gas Field
77°
76°
75°
42°
OGA
Wellsboro
BRADFORD
3
SUSQUEHANNA
WAYNE
NEW YORK
WYOMING
LACKAWANNA
Scranton
SULLIVAN
YCOMING
Williamsport
PIKE
STONE
LUZERNE
COLUMBIA
MONTOUR
NORTHUMBERLAND
MONROE
NEW JERSEY
41°
ACHIANS
UNION
CARBON
SANDSTONE
ORISKANY
SNYDER
SCHUYLKILL
OF
OUTCROP
ATA
RRY
BERKS
DAUPHIN
LEBANON
Harrisburg
MBERLAND
LANCASTER
YORK
ADAMS
77°
76°
40
50
MILES
OIL AND GAS MAP
PENNSYLVANIA
SHOWING DEEP WELLS
COMPLETED DURING
1966
GAS WELL
SHOW OF GAS
DRY HOLE
COMPILED BY WILLIAM S LYTLE AND VIRGINIA FAIRALL

ed, 1966.

Table 6.—*Summary of deep-well completions in Pennsylvania, 1966*

	Development	*Wildcat*	*Storage*	*Total*
Gas	116	13	2	131
Dry	1	19		20
Footage	474,540	190,758	10,850	676,148

DEVELOPMENT IN THE DEEP GAS FIELDS

Table 7 lists the important discoveries of 1966 while Table 8 lists the important dry exploratory tests.

Gas development in Crawford and Erie Counties continued to be active. Figure 8 shows areas of active development in these counties during 1966, location of wildcat wells and field wells worthy of note and probable limits of the area of Oriskany sandstone distribution. The various Medina gas pools are largely stratigraphic traps with updip limits formed by permeability barriers caused by shale-out and possible pinch-out of the reservoir rocks. The regional dip is to the southeast. Their downdip limits are similar, mainly reservoir rock shale-outs. A detailed discussion of one of these pools is given by Dana R. Kelley on the Kastle Medina Gas Field (Lytle and others, 1966). This pool is typical in structure and stratigraphy, but is smaller and has poorer reservoir sand development than the pools to the northwest.

Armstrong County: James Drilling Corp. drilled A. W. Wilson No. 1 (No. 1, Figure 11; Table 10) in Cowanshannock Township on the Greendale anticline to a total depth of 7,197 feet after finding the Oriskany sandstone (Lower Devonian) dry at a depth of 7,120 feet. After fracturing this wildcat it was plugged and abandoned.

Blair County: H. Berkheimer No. 1 (No. 2, Figure 11; Table 10) was drilled in Greenfield Township by Phillips Petroleum Company as a stepout to the Pavia Field on the Pavia anticline. The Oriskany was found at a depth of 6,961 feet and was fractured from 6,881–7,023 feet before being plugged and abandoned at a total depth of 7,100 feet.

Bradford County: An exploratory well was drilled by Fenix and Scisson, Inc. in Wysox Township on the Towanda anticline. This well, the E. and M. Strickland No. 1 (No. 3, Figure 11; Table 10), was dry and abandoned after finding the top of the Salina (Upper Silurian) at 6,080 feet and drilling to a total depth of 6,900 feet.

Cambria County: The Peoples Natural Gas Company drilled a stepout to the Rager Mountain Pool in West Taylor Township. The well, Charles

Table 7.—*Discoveries in Pennsylvania, 1966*

Map No.	*County & Location*	*Operator, Well No. & Lease*	*Compl. Date (mo./day/yr.)*	*Basis for Loc.*	*Total Depth (Feet)*	*Deepest Formation Reached*	*Prod. Depth (Feet)*	*Producing Formation or Zone*	*Init. Prod. (Mcf or BOPD)*	*Field or Pool Name*	*Explor. Class*	*Remarks*
2	Erie County	Pennsylvania Gas Co., M. & K. Frombach No. 1	1/12/66	Sub. Geol.	2,125	Oriskany	2,117	Oriskany	7,500 Mcf	Kidders Corner	SPD	Shallower prod. in Conneaut Field
70	Erie County	Cayman Corp., R. Lasch No. 1	9/19/66	Sub. Geol.	1,863	Oriskany	?	Oriskany	?	Springfield	SPD	Shallower prod. in Conneaut Field
37	Fayette County	Sun Oil Co., Hazel M. Ryan	1/15/66	Sub. Geol., Seis.	8,001	Shriver?	2,991	Upper Dev. Sand	700 Mcf	Sandy Creek	NFD	Shallow field Dis. on minor anticline
14	McKean County	Smith & Michno, McConnell No. 1	8/10/65	Unknown	1,028	Upper Dev.	1,005	Upper Dev. Sand	5 BOPD	Cobb Hollow	NPD	Shallow pool Dis. in NW McKean Co.
35	Somerset Co.	Peoples Natural Gas Co., A. A. Dupre No. 1	8/3/66	Sub. Geol., Seis.	8,205	Oriskany	7,961	Oriskany	5,000 Mcf	Seven Springs	NPD	Test on East flank of Laurel Ridge anticline

Table 8.—*Exploratory Failures in Pennsylvania, 1966*

Map No.	*County & Location*	*Operator, Well No. & Lease*	*Compl. Date (Month/day/year)*	*Basis for Loc.*	*Total Depth (Feet)*	*Deepest Formation Reached*	*Explor. Class*	*Remarks*
1	Armstrong County	James Drilling Corp. A. W. Wilson, No. 1	12/19/66	Sub. Geol.	7,197	Helderberg	NFW	Deep test on west flank of Roaring Run anticline
15	Bradford County	Fenix & Scisson, Inc., Strickland No. 1	8/24/66	Sub. Geol.	6,900	Salina	NFW	Possible waste disposal well
5	Clarion County	Fairman Drilling Co. R. M. Burnham Est. No. 1	10/17/66	Sub. Geol.	5,988	Helderberg	NFW	Deep test in Oriskany no sand area
4	Crawford County	Sun Oil Co., Buckoski No. 1	9/19/66	Sub. Geol., Seis.	6,880	Gatesburg	NFW	Test for additional Gatesburg production
39	Franklin County	Amerite Oil, Shearer & Herr No. 1	10/1/66	Sub. Geol.	1,048	Martinsburg	NFW	Shallow test on minor anticline in northern Franklin County.
141	McKean County	Hungiville & Satterwhite Knox and Southlooker No. 1	10/26/66	Sub. Geol.	4,655	Helderberg	DPT	Deep test on Simpson anticline
142	Mercer County	United Natural Gas Co. J. W. Johnson No. 1	10/3/66	Sub. Geol., Seis.	6,140	Queenston	NFW	Upper Ordovician test
20	Potter County	Cons. Gas Sup. Corp., Dept. Forest & Waters Tr. 129 No. 1	9/14/66	Sub. Geol., Seis.	18,834	Upper or Middle Cambrian	NFW	Deepest well in Appalachian Basin P. B. for storage well
13	Warren County	Felmont Oil Corp., Collins Co. No. 1	2/8/66	Sub. Geol., Seis.	400	Helderberg	NFW	Deep test on small closure in northern Warren County

Miller No. 1 (No. 4, Figure 11; Table 10), found gas in the Oriskany at 7,964 feet. After drilling to a total depth of 7,991 feet the well had an initial natural open flow of 11,000 MCFGPD at a 436 hour rock pressure of 3,132 psi (pounds per squre inch).

Clarion County: A wildcat, R. M. Burnham Estate No. 1 (No. 5, Figure 11; Table 10), was drilled in Limestone Township by Fairman Drilling Company on the Kellersburg anticline. The Oriskany horizon was found dry at 5,945 feet and the well was plugged and abandoned at 5,988 feet.

Crawford County: This was the second most active county in the Commonwealth with its 22 completions during the year. Two of the wells (Nos. 6 and 7, Figure 11; Table 10) were drilled to the Gatesburg (Upper Cambrian) and were plugged and abandoned. No. 7 had been drilled to the Medina (Lower Silurian) in 1965 and then deepened to the Gatesburg in 1966. Production from this deeper pool test well amounted to 100 MCFGPD and salt water after fracturing. A third wildcat, J. W. Fleming No. 1 by Summit Drilling Company in Summit Township (No. 27, Figure 11; Table 10) was completed at a total depth of 4,194 feet in the Power Glen (Cabot Head—see Cate 1965) finding no production after fracturing the Medina. The other 19 wells (Nos. 8 thru 26, Figure 11; Table 10) were Medina gas wells in the Indian Springs Field. The Fee No. 3 by Burnham Gas Company (No. 14, Figure 11; Table 10) in Spring Township had the largest initial production which amounted to 10,000 MCFGPD at a rock pressure of 960 psi in three days. The N. Kilzer No. 1 by J. Sterling McClusky in Beaver Township was a successful stepout (No. 18, Figure 11; Table 10) in the Indian Springs Field.

Erie County: This county was again the most active one in the Commonwealth during the year. A total of 84 wells were completed. Of these 84 wells there were 2 discoveries, 1 dry wildcat, 2 successful stepouts, 1 dry shallower pool test, 1 dry development well, 1 gas storage well, and 76 development gas wells. Of the 76 development gas wells 49 were completed in Bushnell-Lexington Pool, 19 in the Pierce Pool, 6 in the Lundys Lane Pool, and 2 in the Springfield Pool. One of the discoveries, the M. and R. Frombach No. 1 by Pennsylvania Gas Company (No. 58, Figure 11; Table 10) in Conneaut Township was a shallower pool discovery in the Bushnell-Lexington Pool and resulted in discovering the Kidders Corner Oriskany Pool. The well produced 51,000 MCF in 40 days and it was then drilled to 3,274 feet finding gas in the Medina. The other discovery, the R. Lasch No. 1 by Cayman Corp. in Springfield Township (No. 70, Figure 11; Table 10) was a shallower Oriskany pool discovery in the Pierce Pool and resulted in discovering the Springfield Pool. At the end of 1966 a total of 2 development gas wells had been drilled in this pool. No logs had been released by Cayman Corp. at the end of the year. The dry wildcat, Russin No.

1 by Sunset International Petroleum Corp. (No. 28, Figure 11; Table 10) in Franklin Township, was completed at a total depth of 3,050 feet in the Queenston (Upper Ordovician) and was plugged and abandoned. One of the stepouts was in the Blass Pool in Mill Creek Township. The well, D. Fish No. 1 by Earl H. Linn (No. 29, Figure 11; Table 10), produced 640 MCFGPD at a 72 hour rock pressure of 915 psi after fracturing being completed at a total depth of 3,050 feet in the Queenston. The other stepout was drilled by Chemco, Inc. in Conneaut Township in the Bushnell-Lexington Pool. The well, M. and C. Cherry No. 1 (No. 43, Figure 11; Table 10) found 2,900 MCFGPD in the Medina after fracturing at a 48 hour rock pressure of 1120 psi. The largest reported open flow of the 49 development wells drilled in this pool during the year was the R. and E. Dorchester No. 1 by Worldwide Petroleum Corp. (No. 48, Figure 11; Table 10) in Conneaut Township. The well produced 6,900 MCFGPD after fracturing at a rock pressure of 820 psi. A dry development well was drilled in this pool by V. H. Simmons, Jr. in Springfield Township on the Jerry farm. The well was dry and abandoned at a total depth of 3,026 feet in the Queenston. The dry shallower pool test (No. 101, Figure 11; Table 10) was drilled in the Pierce Pool to a total depth of 1,864 feet testing the Oriskany Sandstone. The largest reported open flow of the 19 development gas wells drilled in this pool was the H. Eldridge No. 1 (No. 51, Figure 11; Table 10) by Cayman Corp. in Springfield Township with an open flow of 3,800 MCFGPD after fracturing at a rock pressure of 938 psi after being shut-in for 72 hours. The largest reported open flow of the 6 development wells drilled in the Lundys Lane Pool was the G. R. Taylor No. 1 (No. 91, Figure 11; Table 10) drilled by Transamerican Petroleum Corp. in Elk Creek Township. The initial production from the Medina was 2,759 MCFGPD after fracturing at a rock pressure of 1100 psi in 72 hours. The Medina storage well, Edith Adams No. 2, (No. 151, Figure 11; Table 10) by Pennsylvania Gas Company in Wayne Township was drilled in the Corry Field.

Fayette County: The Hazel M. Ryan No. 1 well, a wildcat in Wharton Township, was drilled by Sun Oil Company to a total depth of 8,011 feet. The Oriskany at 7,858 feet was dry and the well was plugged back to 3,073 feet and completed as a shallow Upper Devonian gas discovery (No. 111, Figure 11; Table 10).

Indiana County: Two stepouts were drilled in the Haddon Pool in Cherry Hill Township. The O. M. Gibson No. 1 by Delta Drilling Company (No. 112, Figure 11; Table 10) was a successful stepout producing 2,000 MCFGPD from the Onondaga chert at a 48 hour rock pressure of 4,050 psi after fracturing. The Robert Stewart No. 1 (No. 113, Figure 11; Table 10) by the Delta Drilling Company found a small amount of gas and salt water in the Oriskany and was plugged and abandoned.

Jefferson County: A wildcat, Dean Barrett No. 1 (No. 114, Figure 11; Table 10), was drilled by Fairman Drilling Company in Henderson Township on the southeast flank of the Sabinsville anticline. The well was completed at a total depth of 7,120 feet in the Hamilton (Middle Devonian). It was plugged back and completed as a shallow Upper Devonian gas well. The rest of the wells were drilled in the Elk Run Field. Of the 26 successful gas wells drilled in this field, 4 were successful stepouts (Nos. 122, 130, 137, 138, Figure 11; Table 10) and 22 were successful development wells. The development well with the largest initial open flow potential in 1966 was the J. J. Travis No. 1 by Consolidated Gas Supply Corp. in Perry Township (No. 139, Figure 11; Table 10). The well produced 20,731 MCFGPD after fracturing with a 43 hour rock pressure of 3,536 psi. To date there are 41 producing gas wells in the Elk Run Field and 3 wells being drilled. If the operators continue to use the same spacing to complete development of the field, approximately 26 more wells will be drilled. If the field had been developed under spacing regulations, probably 50 percent of the current producing wells would not have been drilled.

McKean County: A deeper pool test in the Bradford Field was drilled by Hungiville and Satterwhite on the Knox and South Looker property (No. 141, Figure 11; Table 10). After drilling to a total depth of 4,655 feet and finding the Oriskany dry the well was plugged and abandoned.

Mercer County: Two wells in this county were drilled in search of Silurian production. One, the J. V. Johnson No. 1 (No. 142, Figure 11; Table 10) wildcat by United Natural Gas Company in Sandy Lake Township, found no gas and was abandoned at a total depth of 6,140 feet in the Queenston. The other well by the same company on their Glen W. Snyder property (No. 143, Figure 11; Table 10) was a stepout from production in their Henderson Field. After fracturing the Medina the open flow was 29 MCFGPD and the 140 hour rock pressure was 1,490 psi. The well was plugged and abandoned.

Potter County: Two wildcats were drilled in this county during the year. The Harold House No. 1 by J. D. Nadolski was an old well drilled deeper. The well was drilled in Sweden Township on the Harrison anticline. The well was plugged and abandoned at a total depth of 4,935 feet in the Hamilton. In the Leidy Gas Storage Field the Consolidated Gas Supply Corp. drilled a wildcat, Tract 129 No. 1 (No. 145, Figure 11; Table 10), in Stewardson Township. The well was drilled to a total depth of 18,834 feet becoming the deepest well ever drilled in the Appalachian Basin. The well finished in the Upper or Middle Cambrian and was plugged back to 6,475 feet to be completed as a gas storage well in the Oriskany.

Somerset County: Two wildcats were drilled in search of Oriskany gas and one was successful. The A. A. Dupree No. 1 by the Peoples Natural Gas Company (No. 146, Figure 11; Table 10) was drilled in Middle Creek

Township on the southeast flank of the Laurel Hill anticline. The Oriskany was found at 8,102 feet producing 5,000 MCFGPD after fracturing with rock pressure of 3,320 psi in 144 hours discovering the Seven Springs Pool. The well was still in the Oriskany at a total depth of 8,205 feet. Felmont Oil Corp. drilled James Hoffman No. 1 (No. 147, Figure 11; Table 10) in Shade Township on the Negro Mountain anticline. The Onondaga was folded and faulted. The Oriskany was found at 9,085 feet and the well was plugged and abandoned as a dryhole at 9,194 feet still in the Oriskany.

Warren County: An Oriskany test was drilled in Warren County by Felmont Oil Corp. in Elk Township. The well, Collins Company No. 1 (No. 148, Figure 11; Table 10), was dry in the Oriskany and was plugged and abandoned at a total depth of 4,000 feet in the Helderberg.

Westmoreland County: A wildcat by Peoples Natural Gas Company in Salem Township, their L. G. Haines No. 1 (No. 149, Figure 11; Table 10), was drilled on the Grapeville anticline to a total depth of 7,675 feet in the Helderberg. The Oriskany was dry and the well was plugged and abandoned. A second well in the county was F. M. Sloan No. 1 by Fox, Coen and Sloan (No. 150, Figure 11; Table 10) in Franklin Township on the Murrysville anticline. After fracturing a show of gas in the Oriskany the well was completed at 300 MCFGPD with a seven day rock pressure of 3,100 psi. This well was a stepout of the Sloan Pool.

OUTLOOK FOR 1967—DEEP (ORISKANY & PRE-ORISKANY)

The completion of the Crawford-Erie County Medina gas play is expected in early to middle 1967, unless some extensions or new fields are found by long stepout or wildcat drilling.

The end of development of Elk Run (Oriskany) gas pool, Jefferson County is also expected in middle 1967. Unless the present rate of Oriskany wildcatting goes up, Oriskany activity in deeper basin areas will dwindle to a low ebb in late 1967.

Successful completion of Snee and Eberly's Tuscarora deep gas test in Fayette County should encourage Oriskany tests in the southwestern areas of the State, but the time and expenditures needed for such wells will make this at best a very gradual increase.

An unknown factor in the near future is the extent of exploration for Oriskany gas reserves in the shallow northwestern part of the State. This zone, found gas-bearing in several wells during evaluation of the Medina, may be of primary interest to producers due to its shallow depth. The area of potential Oriskany production and the types of traps are not as yet well defined.

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Table 9. *Deep gas production in Pennsylvania, 1966*

*"Shallow" Gas Production of Field Not Shown
**Corrected Figures

County	*Field*	*Pool*	*Discovery Date*	*Production in MCF* *Cumulative Production at End of 1965*	*Production 1966*	*Cumulative Production at End of 1966*	*Status of Field or Pool at End of 1966*
Armstrong	Shellhammer*	Rupert	11/14/58	341,380	7,911	349,291	Producing
Bedford	Artemus	TOTAL	7/30/63	2,115,000	217,000	2,332,000	Producing
		Pennland	8/28/64	600,000	185,000	785,000	Producing
	Big Mt.		10/6/64	700,000	12,000	712,000	Producing
	Five Forks		6/21/62	13,100,000	712,000	13,812,000	Producing
	Purcell		12/14/57	2,800,000	114,000	2,914,000	Producing
Bedford & Blair	Pavia		10/20/61				Shut In
Cambria........	Rager Mt.		10/16/65		434,726	434,726	Producing
Cameron & Elk..........	Whippoorwill		7/10/61	11,600,000	707,000	12,307,000	Producing
Cameron, Elk, .. Jefferson, ... Clearfield & Indiana.......	Punxsutawney-Driftwood	TOTAL	9/15/51	448,640,000	6,145,000	454,785,000	Producing
		Benezette	1/5/53	235,300,000	1,500,000	236,800,000	Producing
		Driftwood	9/15/51				Producing
		Boone Mt.	9/18/58	94,100,000	2,470,000	96,570,000	Producing
		Du Bois	1/6/60				Producing
		Sabula	8/26/63	540,000	75,000	615,000	Producing
		Helvetia	5/11/60	115,200,000	2,000,000	117,200,000	Producing
		Reed-Deemer	5/9/55 12/1/53				Producing
		Rockton	2/25/55				Producing
		Sykesville	11/10/60				Producing
		Hicks Run	6/7/56	3,500,000	100,000	3,600,000	Producing

Clarion.	Clarion*	Mays	10/30/63	6,218		6,218	Shut In
Clinton & Potter	Leidy	TOTAL	1/9/50	159,383,607	192,792	159,576,399	Gas Storage & Producing
		Ole Bull	1/9/59	4,583,575	192,792	4,776,367	Producing
Crawford & Erie	Conneaut	TOTAL	2/11/57	9,382,798**	4,946,908	14,329,706	Producing
		Beaver Creek	6/10/64	70,000		70,000	Shut In
		Bushnell-Lexington	12/31/58	4,395,600	2,802,488	7,198,088	Producing
		Indian Spring	9/11/57	3,935,858	1,158,000	5,093,858	Producing
		Kastle	7/14/62	410,000**	629,000	1,039,000	Producing
		Lundys Lane	11/9/61	451,340	80,933	532,273	Producing
		Pierce	12/31/58		276,487	276,487	Producing
		Scull	2/3/64	120,000		120,000	Shut In
Erie	Burgess		10/17/60	103,492	10,518	114,010	Producing
	Corry	TOTAL	4/29/47	997,029	9,501	1,006,530	Gas Storage & Producing
		Beaver Dam	5/20/53	143,329	9,501	152,830	Producing
	Meade		8/23/46	4,898,019		4,898,019	Oriskany Gas Storage (One Producing Medina Well)
	Phillipsville		7/17/56	5,000		5,000	Shut In
		Dennee	10/8/65				Shut In
Fayette	Fike		8/8/63	131,660	31,579	163,239	Producing
	Ohiopyle		12/28/59	2,848,500	197,074	3,045,574	Producing
	Spruell		10/13/61				Shut In
	Summit	TOTAL	3/24/38	40,792,016	359,599	41,151,615	Producing & Abandoned
		East Summit	12/31/60	27,150		27,150	Shut In
		Heyn	2/4/64	40,659		40,659	Abandoned
		North Summit	3/24/38	20,468,047	96,219	20,564,266	Producing
		South Summit	5/9/42	20,256,160	263,380	20,519,540	Producing

Table 9. *Deep gas production in Pennsylvania, 1965, Continued*

				Production in MCF			
County	*Field*	*Pool*	*Discovery Date*	*Cumulative Production at End of 1965*	*Production 1966*	*Cumulative Production at End of 1966*	*Status of Field or Pool at End of 1966*
Indiana	Cherry Hill*	Crichton	1/9/63	1,732,582	271,831	2,004,413	Producing
		Hadden	7/11/63				
	Jacksonville		9/21/56	24,000,000	550,156	24,550,156	Producing
	Nolo		9/30/56	6,400,000	180,000	6,580,000	Producing
Jefferson.......	Big Run	Elk Run	6/20/65		1965 Discovery		Producing
Potter	Ellisburg	TOTAL	9/1/33	79,600,000			Storage
		Bingham Center	1/2/39				Storage
		Ellisburg	9/1/33	79,600,000			Storage
		West Bingham	7/16/36				Storage
	Ulysses		10/2/39	2,599,359	213,342	2,812,701	Producing
		New Field	4/2/62				
Somerset	Boswell	TOTAL	11/11/58	7,972,416	565,586	8,538,002	Producing
		Boswell	11/11/58	7,328,046	506,806	7,834,852	Producing
		Snyder	6/16/60	644,370	58,780	703,150	Producing
	Mt. Zion		8/21/63				Abandoned
	Somerset		3/9/64	70,000		70,000	Shut In
Warren	Camp Run		5/12/61	15,990		15,990	Abandoned
Washington	Daniels Run*	Glyde	9/6/61	43,948	8,369	52,317	Producing

Westmoreland . . .	Blairsville*	Kahl	10/23/62	8,682,922	984,959	9,667,881	Producing
	Latrobe*	Dry Ridge	8/25/46	3,018,016	585,078	3,603,094	Producing
	Jacobs Creek*	Bailey	12/26/61	399,266	82,271	481,537	Producing
	Lycippus	TOTAL	8/17/49	5,287,702	156,255	5,443,957	Producing & Abandoned
		Derry	12/5/58				Abandoned
		Piper	8/17/49				Abandoned
		St. Boniface	9/13/56				
		Chapel		4,548,274	156,255	4,704,529	Producing
		Hribal	8/17/62				Abandoned
	Murrysville*	Sloan	10/22/63	72,590**	22,075	94,665	Producing
		Duquesne	8/8/65	31,456	96,237	127,693	Producing
Westmoreland & Somerset	Johnstown	TOTAL	5/16/57	16,436,384	1,412,002	17,848,386	Producing
		Baldwin	5/22/60	5,658,162	468,202	6,126,364	Producing
		Beck	5/16/57				
		Williams	2/14/58	10,778,222	943,800	11,722,022	Producing
	Seven Springs	TOTAL	12/15/58	5,088,450	470,379	5,558,829	Producing & Abandoned
		Blair	12/5/58	4,380,179	455,227	4,835,406	Producing
		Tunnel	3/10/65				Producing
		Clarke	3/15/61	382,065	15,152	397,217	Producing
		Kooser	5/19/59	326,206		326,206	Abandoned
		Seven Springs	8/3/66				Shut In

TABLE 10

The information presented in the table has been compiled mainly from drillers' logs and location plats received from the Oil and Gas Division of the Department of Mines and Mineral Industries. Other sources of data are Petroleum Information Corporation (PI), geophysical logs received by the Survey, and personal communications with the oil and gas operators. As of March 9, 1967 the cut-off date for preparation of the table, approximately 15 percent of the deep wells drilled in 1966 had not yet been reported to the Department of Mines and Mineral Industries. In cases where no well information was available from the Department of Mines and Mineral Industries, the location and completion status of the well was usually obtained from PI. For formation tops and completion results the interested person is advised to contact either the operator of the well or PI.

Meanings of the abbreviations used in the table are listed below:

AF—after fracture
D.L.—drillers log
Frac—fracture, fracturing
G—ground level elevation
KB—Kelly Bushing elevation
Nat—natural production
PI—Petroleum Information Corp.
perf—perforated
P & A—plugged and abandoned
R. P.—rock pressure
RT—Rotary table elevation
SG—Show of gas
SW—salt water

Table 10. *Summarized records of deep wells drilled in Pa. in 1966*

MAP NUMBER		1	2	3	4	5	6	7	8	9	10
COUNTY Permit Number		ARMSTRONG 867	BLAIR 4	BRADFORD 4	CAMBRIA 8	CLARION 270P	CRAWFORD 188	CRAWFORD 1537	CRAWFORD 190	CRAWFORD 191	CRAWFORD 192
NAME OF WELL		A. W. Wilson 1	H. Berkheimer 1 1	E. & M. Strickland 1	Charles Miller 1	R. M. Burnham Est. 1	Buckoski Unit 1	O. S. Burnham 2	O. S. Burnham 3	O. S. Burnham 4	O. S. Burnham 5
OPERATOR		James Drilling Corp.	Phillips Pet Co.	Fenix & Scisson Inc.	The Peoples Nat. Gas Co.	Fairman Drilling Co.	Sun Oil Co.	James Drilling Corp.	James Drilling Corp.	James Drilling Corp.	James Drilling Corp.
TOWNSHIP		Cowanshannock	Greenfield	Wysox	West Taylor	Limestone	Cussewago	Spring	Spring	Spring	Spring
QUADRANGLE		Rural Valley H 2	Ebensburg F 4	Towanda H 4	Johnstown D 5	Clarion C 7	Cambridge Springs G 23	Girard H 195	Girard H 279	Girard H 274	Girard H 285
LATITUDE		1700 ft. S 40° 50'	2500 Ft. N 40° 20'	4950 ft. N 41° 45'	8800 ft. S 40° 25'	600 ft. N 41° 10'	3600 ft. S 41o 50'	8700 ft. N 41° 45'	23,700 ft. S 41° 50'	21,100 ft. S 41o 50'	21,800 ft. S 41° 50'
LONGITUDE		1200 ft. W 79° 20'	5000 ft. E 78° 35'	2800 ft. E 76° 25'	11,800 ft. W 78° 55'	5600 ft. W 79° 15'	6000 ft. W 80° 10'	4950 ft. W 80° 20'	7500 ft. W 80° 20'	4900 ft. W 80° 20'	6700 ft. W 80° 20'
DATE COMPLETED		12-19-66	2-4-66	8-24-66	10-11-66	10-17-66	9-19-66	Drilled Deeper 6-24-66	7-7-66	7-14-66	7-19-66
ELEVATION		1430 KB	2326 DF	716 KB	2518 DF	1474 KB	1409 KB	1174 KB	1085 DF	1185 DF	1085 DF
TULLY		6518 -		3610 - 3680	7060 -	5500 -	2489 -				
ONONDAGA	LIMESTONE	7000 -	6880 -	5344 -	7834 -	5773 -	[illegible] -				
	CHERT	7018 -	6932 -		7852 -	5883 -					
ORISKANY		7120 - 22	6961 -	5590 -	7964 -	5945 - Horizon	2913 - 17		SW 2602	SW 2670	
SALINA				6080 -			2989 -				
GUELPH-LOCKPORT Block Water							3600-		3450-	3533-	3420-
CLINTON IRONDEQUOIT							3840 3921 - 30		3630 -	3705 -	3630 -
MEDINA							3958 -		perf:3719, 3730	perf:3795, 3822	perf:3727 - 29
QUEENSTON							4129 -				3845 ?
MIDDLE ORDOVICIAN LIMESTONES							5982 - 6616	5793 - 6441			
GATESBURG							Upper Sandy 6682	Upper Sandy 6441			
TOTAL DEPTH		7197	7100 (PI)	6900	7991	5988	6880	TD in 1965- 3965 TD in 1966- 6505	3880	3888	? 3815 (DL) 3871 (PI)
DEEPEST FORMATION REACHED		Helderberg	Helderberg	Salina	Oriskany	Helderberg	Gatesburg	Gatesburg	Queenston	Power Glen	Power Glen ? Queenston ?
RESULT		P & A Frac'd 7031 - 7197	P & A Frac'd 6881 - 7023	Exploratory well not drilled for oil and gas	11,000 Mcf Nat. 3132 psi 436 hrs.	P & A	P & A SW 6750 - 60	P & A SG 6443 - 47 6462 - 66 perf: 6471 100 Mcf & SW	8000 Mcf AF 920 psi 12 hrs.	2000 Mcf 910 psi 48 hrs.	4500 Mcf AF 950 psi 12 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	11	12	13	14	15	16	17	18	19	20
COUNTY Permit Number	CRAWFORD 193	CRAWFORD	CRAWFORD 200	CRAWFORD 201	CRAWFORD 195	CRAWFORD 199	CRAWFORD 203	CRAWFORD 189	CRAWFORD 194	CRAWFORD 202
NAME OF WELL	O.S. Burnham 6	Conneautville Boro 1	Fee 2	Fee 3	T.L. Graham 1	T.L. Graham 2	A.A. Johnston 1	N. Kilzer 1	V. Lapisch 1	Bertha Lewis 1
OPERATOR	James Drilling Corp.	James Drilling Corp.	Burnham Gas Co.	Burnham Gas Co.	James Drilling Corp.	James Drilling Corp.	James Drilling Corp	J. Sterling McCluskey	J. Sterling McCluskey	James Drilling Corp.
TOWNSHIP	Spring	Conneaut	Spring	Spring	Spring	Spring	Conneaut	Beaver	Beaver	Spring
QUADRANGLE	Girard H 282	Girard H 333	Girard H 286	Girard H 308	Girard H 287	Girard H 323	Girard H 327	Girard H 288	Girard G 315	Girard H 284
LATITUDE	23,200 ft. S 41° 50'	26,750 ft. S 41° 50' (PI)	22,950 ft. S 41° 50'	22,500 ft. S 41° 50'	23,650 ft. S 41° 50'	24,800 ft. S 41° 50'	6300 ft. N 41° 45'	4600 ft. N 41° 45'	25,100 ft. S 41° 50'	4800 ft. N 41° 45'
LONGITUDE	9100 ft. W 80° 20'	7850 ft. W 80° 20' (PI)	9450 ft. W 80° 20'	6500 ft. W 80° 20'	5000 ft. W 80° 20'	8000 ft. W 80° 20'	9600 ft. W 80° 20'	500 ft. E 80° 25'	1000 ft. W 80° 25'	5300 ft. W 80° 20'
DATE COMPLETED	7-13-66	11-26-66	7-21-66	10-9-66	8-3-66	10-12-66	11-8-66	8-5-66	10-1-66	7-27-66
ELEVATION	990 G	1046 DF	1035 DF	1100 G	1140 G	1044 RT	1018 KB	1128 RF	1128 G	1135 DF
TULLY										
ONONDAGA	2300 -		2332 -	2435 -	2471 -		2330 -	2395 -	2413 -	2450 -
ORISKANY					2670 -				2610 - 15	
SALINA										
GUELPH - LOCKPORT Black Water								3490 -		
CLINTON IRONDEQUOIT	3528 -			3646 -	3701 -	3603 - 10	3560 -	3641 -	3634 -	3687 -
MEDINA	perf: 3634 - 3636		perf: 3661, 3675 - 91	perf: 3748 - 66	perf: 3782, 84, 96, 98	perf: 3706 - 10, 3723	perf: 3656 - 66	perf: 3731, 3743 - 48, 52-55, 63-67	perf: 3702 - 05, 16-20, 27-28, 37-45, 51-53	perf: 3796 - 3814
QUEENSTON					3918 -	3820 -				3906 -
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3790	3856 (PI)	3766	3783	3935	3850	3792	3788	3848	3937
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Power Glen	Queenston	Queenston	Queenston	Power Glen	Power Glen	Queenston
RESULT	1500 Mcf AF 910 psi 12 hrs.	Gas well Logs not yet released to State	2000 Mcf AF 900 psi	10,000 Mcf Nat. 960 psi 3 days	4000 Mcf AF 1020 psi 12 hrs.	1100 Mcf AF 1190 psi 24 hrs.	1100 Mcf AF 1160 psi 24 hrs.	2000 Mcf AF 1150 psi 12 hrs.	2000 Mcf AF 915 psi 48 hrs.	2000 Mcf AF 1050 psi 12 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	21	22	23	24	25	26	27	28	29	30
COUNTY Permit Number	CRAWFORD 198	CRAWFORD 196	CRAWFORD 197	CRAWFORD	CRAWFORD	CRAWFORD	CRAWFORD 158	ERIE	ERIE 206	ERIE 273
NAME OF WELL	J. Maringo 1	J. Michalski 1	J. Michalski 2	O. Nelson 1	O. Newland 1	R. Tinker 1	J. W. Fleming 1	Russin 1	O. Fish #1 Karpinski Unit	Adams 1
OPERATOR	James Drilling Corp.	James Drilling Corp.	James Drilling Corp.	James Drilling Corp.	James Drilling Corp.	James Drilling Corp.	Summit Drilling	Sunset Intern'l Pet. Co.	Earl H. Linn	Chemco Oil & Gas Co.
TOWNSHIP	Spring	Spring	Spring	Spring	Spring	Spring	Summit	Franklin	Mill Creek	Conneaut
QUADRANGLE	Girard H 324	Girard H 283	Girard H 289	Girard H 342	Girard H 340	Girard H 341	Linesville F 33	Cambridge Springs A. 22	Erie H 111	Girard E 332
LATITUDE	26,900 ft. S 41° 50'	22,050 ft. S 41° 50'	24,700 ft. S 41° 50'	20,150 ft. S 41° 50' (PI)	19,300 ft. S 41° 50' (PI)	19,150 ft. S 41° 50' (PI)	350 ft. S 41° 40'	5,400 ft. N 41° 55' (PI)	10.200 ft. S 42° 05'	7,200 ft. S 41° 55'
LONGITUDE	4400 ft. W 80° 20'	2700 ft. W 80° 20'	3000 ft. W 80° 20'	200 ft. W 80° 20' (PI)	2750 ft. W 80° 20' (PI)	1400 ft. W 80° 20' (PI)	15,000 ft. W 80° 15'	1700 ft. E 80° 15' (PI)	13.800 ft. W 80° 05'	11,350 ft. W 80° 20'
DATE COMPLETED	10-20-66	7-14-66	7-26-66	12-31-66	12-15-66	12-24-66	5-20-66	3-4-66	2-12-66	9-23-66
ELEVATION	1140 KB	1225 DF	1198 RF	1260 G	?	1260 G	1185 G	1189 RF	860 KB	868 G
TULLY							2565 -		1460 -	
ONONDAGA	2470 -	2544 -					2725 -		1690 -	1892 -
ORISKANY	SW 2699						2936 - SW@ 2937		SW@ 1980	
SALINA										
GUELPH-LOCKPORT Block Water	3546-	3590 -	3560-				SG, SW 3845			
CLINTON IRONDEQUOIT	3707 ?	3769 (PI)	3762						2805 - 15	3100 -
MEDINA	3734 perf: 3814, 18, 27, 31	perf: 3874, 76	perf: 3867 - 68 79 - 80				SG 4140 ± perf & frac		perf: 2859 - 93	perf: 3157 - 58 3184 - 94
QUEENSTON	3930-	3982 ? (PI)	3982 -						3000-	
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3966	3987	4002	4002 (PI)	3991 (PI)	4064 (PI)	4194	3647 (PI)	3050	3312
DEEPEST FORMATION REACHED	Queenston	Queenston ?	Queenston	Power Glen ?	Queenston	Queenston	Power Glen	Queenston	Queenston	Queenston
RESULT	4000 Mcf AF 1020 psi 24 hrs.	2000 Mcf AF 1100 psi 12 hrs.	2000 Mcf AF 1090 psi 24 hrs.	Gas well Logs not yet released to State	Gas well Logs not yet released to State	Gas well Logs not yet released to State	Abandoned ? Logs not yet released to State	Abandoned - Logs not yet released to State	640 Mcf gas AF R.P. 915 psi 72 hrs.	1000 Mcf AF 975 psi

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	31	32	33	34	35	36	37	38	39	40
COUNTY Permit Number	ERIE 259	ERIE	ERIE	ERIE 257	ERIE 260	ERIE 230	ERIE 231	ERIE	ERIE	ERIE
NAME OF WELL	Lonny Adams 1	Bembridge 1	Baptist 1	F. C. Barris 1	F. J. Barris 1	M.&L. Bish 1	M.&L. Bish 2	Boothby 1	Boothby 2	B. C. Boothby 3
OPERATOR	James Drilling Corp.	Chemco O & G Co.	Cayman Corp.	James Drilling Corp.	James Drilling Corp.	C.G.S. Mgt. Co.	C.G.S. Mgt. Co.	Cayman Corp.	Cayman Corp.	Cayman Corp.
TOWNSHIP	Conneaut	Elk Creek	Springfield	Conneaut	Conneaut	Conneaut	Conneaut	Springfield	Springfield	Springfield
QUADRANGLE	Girard O 313	Girard F 335	Girard A 248	Girard O 309	Girard O 310	Girard E 276	Girard E 273	Girard A 329	Girard B 330	Girard A 325
LATITUDE	10,300 ft. S 41° 55'	19,000 ft. S 41° 55' (PI)	150 ft. S 42° 00'	14,800 ft. S 41° 55'	11,700 ft. S 41° 55'	1350 ft. S 41° 55'	2200 ft. S 41° 55'	17,100 ft. S 42° 00' (PI)	18,600 ft. S 42° 00' (PI)	22,800 ft. S 42° 00' (PI)
LONGITUDE	1500 ft. W 80° 30'	20,300 ft. W 80° 15' (PI)	5000 ft. W 80° 25'	4700 ft. W 80° 30'	4100 ft. W 80° 30'	9600 ft. W 80° 20'	11,900 ft. W 80° 20'	1350 ft. W 80° 25' (PI)	200 ft. E 80° 25' (PI)	1700 ft. W 80° 25' (PI)
DATE COMPLETED	10-29-66	12-12-66	2-28-66	10-7-66	10-10-66	6-4-66	5-22-66	12-22-66	12-22-66	12-16-66
ELEVATION	916 DF	1025 G	647 KB	925 DF	918 G	831 G	834 G	774 DF	811 KB	820 G
TULLY						1630 -	1640 -			
ONONDAGA	1860 -		1356 -	1895 -	1868 -	1812 -	1820 -	1640 -	1704 -	1724 -
ORISKANY	2167 - 2172 SG & SW at 2172		1656 ?	2200 - horizon SW	2210 - Horizon		2072 -	1888 ? - 1932	1954 ? - 83	1987 ? - 2003
SALINA			1750 -					2014 -	2066 -	2088 -
GUELPH - LOCKPORT Block Water	2920 -		2242 -	3010 -	2928 -	2874 -	2873 -	2502 -	2562 -	2590 -
CLINTON IRONDEQUOIT	3076 - 3088		2500 - 2550 - 2561	3120 - 34	3089 -	3016 -		2712 - 2815 -	2820 - 2873 -	2852 - 2906 - 2918
MEDINA	3110 - perf: 3161,64,66		2577 - perf: 2590 - 2690	perf: 3201, 19, 23, 27	perf: 3178, 84, 90	perf: 3084, 92, 99, 3122 - 24	perf: 3107 - 09 3129 - 31	2844 -	2902 -	2937 -
QUEENSTON			2748 -		3290 -			3006 -	3069 -	3100 -
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3273	3568 (PI)	2775	3364	3306	3239	3234	3025	3080	3155
DEEPEST FORMATION REACHED	Queenston ?	Power Glen ?	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston
RESULT	600 Mcf gas AF R. P. 895 psi 24 hrs.	Gas well - Logs not yet released to State	783 Mcf gas AF R. P. 880 psi 72 hrs.	1000 Mcf gas AF R. P. 980 psi	1500 Mcf gas AF R. P. 990 psi 24 hrs.	1000 Mcf gas AF R. P. 985 psi 13 hrs.	1300 Mcf gas AF R. P. 1000 psi 15 hrs.	Gas well - Drillers log not yet released to State	Gas well - Drillers log not yet released to State	Gas well - Drillers log not yet released to State

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	41	42	43	44	45	46	47	48	49	50
COUNTY Permit Number	ERIE 246	ERIE 243	ERIE 229	ERIE 244	ERIE 251	ERIE 271	ERIE 219	ERIE 249	ERIE 233	ERIE 265
NAME OF WELL	W. & A. Brewster 1	Cerman 1	H. & C. Cherry 1	Truman Cherry 1	Chorney 1	C. E. Clark 1	F. F. Cline 1	R.&E. Oorchester 1	Charles Ebner 1	L.&G. Einhiple 1
OPERATOR	Worldwide Pet. Corp.	Betz Oil Co.	Chemco, Inc.	Worldwide Pet. Corp.	Ceyman Corp.	James Drilling Corp.	Midterra Oil Co.	Worldwide Pet. Corp.	Thorsen Oil Co.	Betz Oil Co.
TOWNSHIP	Conneaut	Springfield	Conneaut	Conneaut	Springfield	Conneaut	Springfield	Conneaut	Conneaut	Conneaut
QUADRANGLE	Girard E 301	Girard A 295	Girard E 275	Girard E 306	Girard A 291	Girard D 337	Girard A 258	Girard E 303	Girard B 271	Girard E 316
LATITUDE	4850 ft. S 41° 55'	1400 ft. N 41° 55'	3800 ft. S 41° 55'	6000 ft. S 41° 55'	9850 ft. S 42° 00'	12,600 ft. S 41° 55'	5400 ft. N 41° 55'	3400 ft. S 41° 55'	200 ft. N 41° 55'	1600 ft. S 41° 55'
LONGITUDE	3200 ft. E 80° 25'	4400 ft. W 80° 25'	10,400 ft. W 80° 20'	9900 ft. E 80° 25'	6700 ft. W 80° 25'	4100 ft. W 80° 30'	4800 ft. E 80° 30'	9100 ft. E 80° 25'	10,600 ft. W 80° 20'	8300 ft. W 80° 20'
DATE COMPLETED	8-6-66	7-12-66	6-18-66	8-14-66	6-13-66	10-24-66	3-15-66	6-27-66	5-28-66	10-31-66
ELEVATION	912 DF	822 G	875 G	843 G	697 G	935 KB	810 KB	844 G	857 DF	890 G
TULLY	1716 -									
ONONDAGA	1886 -	1740 -	1880 -	1846 -	1480 -	1895 -	1660	1829 -		1870 -
ORISKANY	2120 -	2104 -	2136 -	2088 - SW	1786	SW@ 2200	SG@ 1888	SW 2066		Horizon
SALINA										
GUELPH - LOCKPORT Black Water	2940 -			2835 -		2940 -		2882 -		2890 -
CLINTON IRONDEQUOIT	3092 -	2937 -	3090 -	3058 -	2690 -	3115 -	2859 -	3034 -	3024 -	3073 -
MEDINA	perf: 3139, 53, 88, 90	perf: 2989 - 91, 3000, 3015 - 17	perf: 3138 - 39, 60, 3169, 76, 96 - 97	perf: 3133 - 35 3153, 62	perf: 2736 - 2835	perf: 3203, 13	perf: 2942 - 43 2962 - 63 3006 - 07	perf: 3132, 34		3101 - perf: 3120 - 77
QUEENSTON						3315 -				
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3277	3075	3221	3266	2919	3337	3149	3246	324	3171
DEEPEST FORMATION REACHED	Power Glen	Power Glen	Power Glen	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Power Glen
RESULT	1550 Mcf gas AF R. P. 1040 psi 24 hrs.	1350 Mcf gas AF R. P. 1500 psi	2900 Mcf gas AF R. P. 1120 psi 48 hrs.	750 Mcf AF R. P. 650 psi	1275 Mcf AF 915 psi 72 hrs.	5000 Mcf AF 990 psi 24 hrs.	1128 Mcf AF R. P. 750 psi 24 hrs.	6900 Mcf gas AF R. P. 820 psi	4340 Mcf gas AF R. P. 1120 psi 24 hrs.	3519 Mcf gas AF R. P. 875 psi 13 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	51	52	53	54	55	56	57	58	59	60
COUNTY Permit Number	ERIE 250	ERIE 264	ERIE 270	ERIE 263	ERIE 274	ERIE	ERIE 248	ERIE 218	ERIE 191	ERIE
NAME OF WELL	H. Eldridge 1	O. English	Wm. Ertman 1	Fairview Nurseries, 1	Fahlon 1	Fisher 1	O.&B. Fobes 1	H.&R. Frombach 1	A. H. Geedecker 1	Grubbs 1
OPERATOR	Cayman Corp.	Cayman Corp.	James Drilling Corp.	Cayman Corp.	Chemco O & G Co.	Platco Corp.	Worldwide Pet. Corp.	Penna. Gas Co.	Platco Corp.	Cayman Corp.
TOWNSHIP	Springfield	Springfield	Conneaut	Springfield	Elk Creek	Conneaut	Conneaut	Conneaut	Conneaut	Springfield
QUADRANGLE	Girard B 267	Girard B 270	Girard D 338	Girard B 292	Girard F 311	Girard D 331	Girard E 302	Girard E 263	Girard E 246	Girard A 320
LATITUDE	19,200 ft. S 42° 00'	15,000 ft. S 42° 00'	16,600 ft. S 41° 55'	9300 ft. S 42° 00'	7700 ft. N 41° 50'	8600 ft. S 41° 55' (PI)	2800 ft. S 41° 55'	1750 ft. S 41° 55'	3450 ft. S 41° 55'	15,700 ft. S 42° 00' (PI)
LONGITUDE	3400 ft. E 80° 25'	2900 ft. E 80° 25'	4100 ft. W 80° 30'	6800 ft. E 80° 25'	3600 ft. E 80° 20'	2000 ft. W 80° 25' (PI)	6800 ft. E 80° 25'	600 ft. E 80° 25'	300 ft. E 80° 25'	2700 ft. W 80° 25' (PI)
DATE COMPLETED	5-29-66	5-21-66	11-8-66	6-29-66	9-9-66	12-9-66	6-21-66	4-15-66	1-17-66	11-17-66
ELEVATION	836 DF	780 DF	954 KB	736 DF	1085 G	890 KB	898 DF	908 G	928 KB	761 DF
TULLY										
ONONDAGA	1735 -	1632 -	1918 (PI) -	1540 -	2210 -		1868 -	1858 -	1885 -	
ORISKANY		1918 - 32		1844 -	2484 - SW, SG		SWD 2112	2117 - 2130 Gas		Gas
SALINA		2012 -						2232 -		
GUELPH - LOCKPORT Block Water		2484 - 2614 -					2915 -	2738 -		
CLINTON IRONDEQUOIT	2884 -	2742 2794 -	3147 (PI) -	2710 -	3426 -		3074 -	3016 - 3070 -	3090 -	
MEDINA	perf: 2934 - 3035	2825 - perf: 2838 - 2924	perf: 3243 - 50	perf: 2762 - 2705	perf: 3486, 3511, 3524, 3540 - 42		perf: 3146, 48, 76, 78, 79	3100 - perf: 3127 - 3208	perf: 3184	
QUEENSTON		2996 -	3351 - (PI)					3271 -		
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3136	3014	3365 (PI)	2929	3620 (PI)	3300 (PI)	3272	3274	3345	1857 (PI)
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Power Glen ?	Queenston	Queenston ?	Queenston	Queenston	Oriskany
RESULT	3800 Mcf gas AF R. P. 938 psi 72 hrs.	1700 Mcf gas AF R. P. 960 psi 72 hrs.	1000 Mcf AF 875 psi 12 hrs.	1075 Mcf gas AF R. P. 998 psi 72 hrs.	1500 Mcf AF 1090 psi	Gas well - Logs not yet released to State	1000 Mcf gas AF R. P. 680 psi 12 hrs.	Oriskany 51,000 Mcf in 40 days Medina 399 Mcf AF 950 psi 16 hrs.	3000 Mcf gas AF R. P. 978 psi 14 hrs.	Gas well Logs not yet released to State

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	61	62	63	64	65	66	67	68	69	70
COUNTY Permit Number	ERIE 272	ERIE 203	ERIE 197	ERIE 198	ERIE 221	ERIE 234	ERIE 236	ERIE 227	ERIE 205	ERIE
NAME OF WELL	C.E. Hammond 1	W.K. Hopkins 1	C. Howard 1	H. Howard 1	R.G. King 1	Krawczyn 1	G.&E. Kreider 1	C.&M. Kreig 1	L. Lehnan 1	R. Lasch 1
OPERATOR	James Drilling Corp.	Midterra Associates, Inc.	Cayman Corp.	Cayman Corp.	Midterra Oil Corp.	Chemco, Inc.	Betz Oil Co.	C.G.S. Mgt. Co.	Cayman Corp.	Cayman Corp.
TOWNSHIP	Conneaut	Springfield	Springfield	Springfield	Springfield	Elk Creek	Conneaut	Conneaut	Springfield	Springfield
QUADRANGLE	Girard D 339	Girard A 250	Girard B 253	Girard B 254	Girard A 264	Girard F 299	Girard D 294	Girard E 266	Girard A 256	Girard A 307
LATITUDE	12,800 ft. S 41° 55'	2500 ft. N 41° 55'	8800 ft. S 42° 00'	7400 ft. S 42° 00'	300 ft. N 41° 55'	12,800 ft. N 41° 50'	3500 ft. S 41° 55'	1650 ft. S 41° 55'	7200 ft. S 42° 00'	16,800 ft. S 42° 00' (PI)
LONGITUDE	600 ft. W 80° 30'	4250 ft. E 80° 30'	2300 ft. E 80° 25'	3100 ft. E 80° 25'	1800 ft. E 80° 30'	1700 ft. E 80° 20'	4350 ft. W 80° 25'	8000 ft. E 80° 25'	10,300 ft. W 80° 25'	2700 ft. W 80° 25' (PI)
DATE COMPLETED	11-11-66	1-21-66	1-29-66	1-1-66	3-29-66	7-20-66	5-6-66	5-15-66	3-2-66	9-19-66
ELEVATION	933 RT	854 DF	727 KB	726 G	847 G	1020 G	926 RF	890 DF	660 KB	750 G
TULLY										
ONONDAGA		1710 -	1508 -	1552 -	1710 -	2152 -	1872 -	1858 -	1417 -	
ORISKANY			1817 -	1864 - 74					1728 ? - 47 ?	Gas
SALINA				1960 -					1823 -	
GUELPH - LOCKPORT Black Water				2413 -				2894 -	2316 -	
CLINTON IRONDEQUOIT	3112 -	2926 -	2714-	2662 - 2725 -	2938 -	3344	3084 -	3060 -	2580 - 2630 -	
MEDINA	perf: 3209, 13, 15	perf: 2974 2976 - 3018 3023, 59	perf: 2755 - 2827	2756 perf: 2765 - 2809	perf: 2983, 85, 3027 - 33	perf: 3414 - 40	perf: 3125, 29, 49, 50, 86, 88	perf: 3114, 22, 30, 37, 64	2658 - perf: 2668 - 2744	
QUEENSTON	3312-			2922-						
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3332	3127	2942	2959	3103	3494	3307	3270	2843	1863 (PI)
DEEPEST FORMATION REACHED	Queenston	Whirlpool ?	Queenston	Queenston	Queenston	Power Glen	Queenston	Queenston	Queenston	Oriskany
RESULT	1500 Mcf gas AF 975 psi 12 hrs.	1470 Mcf gas AF R. P. 850 psi 12 hrs.	1410 Mcf gas AF R. P. 907 psi 96 hrs.	1658 Mcf gas AF R. P. 928 psi 96 hrs.	1520 Mcf gas AF R. P. 800 psi 24 hrs.	4000 Mcf gas AF R. P. 1120 psi 48 hrs.	700 Mcf gas AF R. P. 1200 psi Immediately	2800 Mcf gas AF R. P. 1030 psi 12 hrs.	1644 Mcf gas AF R. P. 891 psi 48 hrs.	Gas well Logs not yet released to State

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	71	72	73	74	75	76	77	78	79	80
COUNTY Permit Number	ERIE	ERIE 196	ERIE 237	ERIE 261	ERIE	ERIE	ERIE 275	ERIE 212	ERIE 247	ERIE 267
NAME OF WELL	Mac Millan 1	J. Hundowsky 1	W.&S. Hurkens 1	W. Nelger 1	Newman 1	Osterberg 1	H.&H. Penko 2	G. G. Peters 1	H. Pomeroy 1	H.&H. Reinke 2
OPERATOR	James Drilling Corp.	Cayman Corp.	Betz. Oil, Inc.	Cayman Corp.	Cayman Corp.	Cayman Corp.	Thorsen Oil Co.	Cayman Corp.	Worldwide Pet. Corp.	Worldwide Pet. Corp.
TOWNSHIP	Conneaut	Springfield	Springfield	Springfield	Springfield	Springfield	Elk Creek	E Springfield	Conneaut	Conneaut
QUADRANGLE	Girard O 326	Girard A 249	Girard B 297	Girard B 268	Girard B 322	Girard A 319	Girard F 314	Girard B 252	Girard E 304	Girard E 318
LATITUDE	9500 ft. S 41° 55' (PI)	4100 ft. S 42° 00'	2400 ft. N 41° 55'	13,300 ft. N 41° 55'	14,550 ft. S 42° 00' (PI)	13,100 ft. S 42° 00' (PI)	16,000 ft. S 41° 55'	14,400 ft. S 42° 00'	2750 ft. S 41° 55'	7300 ft. S 41° 55'
LONGITUDE	4600 ft. W 80° 30' (PI)	9400 ft. E 80° 30'	1100 ft. E 80° 25'	5400 ft. E 80° 25'	15,800 ft. W 80° 20' (PI)	1900 ft. W 80° 25' (PI)	2300 ft. E 80° 20'	150 ft. E 80° 25'	9700 ft. W 80° 20'	8300 ft. E 80° 25'
DATE COMPLETED	12-14-66	2-28-66	4-11-66	5-11-66	11-7-66	11-7-66	9-2-66	2-12-66	7-28-66	10-19-66
ELEVATION	908 KB	651 KB	866 RF	817 OF	779 KB	753 KB	1184 DF	743	833 G	850 DF
TULLY										
ONONDAGA		1426 -	1794 -	1692 -		1641 -	2210 -	1595 -	1827 -	1850 -
ORISKANY		1728 ? - 1754 ?	2074 -	1956 ? - 1959		? - 1960	2480 - SW, SG	1892 - 1904	2088 - SW 2090	2160 - SW@ 2163
SALINA		1838 -		2054 -		2042 -		1984 -		
GUELPH - LOCKPORT Black Water		2280 -		2550 -		2465 -		2449 -	2850 -	2890 -
CLINTON IRONDEQUOIT		2536 - 2588	3002 -	2810 - 2860 -		2722 - 2775 -	3420 -	2711- 2759 -	3034 -	3058 -
MEDINA		2615 - parf: 2621 - 2731	perf: 3049 - 3102	2889 pef : 2908 - 3006		2803 -	perf: 3471 - 94	2789 - perf: 2807 - 61	perf: 3099,3101, 3125, 27	perf: 3143. 54, 65
QUEENSTON		2782 -		3060 -		2972 -		2957 -		
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3277 (PI)	2818	3238	3111	3014 (PI)	3013	3525	2997	3252	3200
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Queenston	Queenston	Queenston	Power Glen	Queenston	Queenston	Queenston
RESULT	Gas well - Logs not yet released to State	958 Mcf gas AF R. P. 885 psi 3 days	3820 Mcf gas AF (PI) R. P. 1000 psi 32 hrs. (PI)	2850 Mcf gas AF R. P. 975 psi 72 hrs.	Gas well - Drillers Log not yet released to State	Gas well - Drillers Log not yet released to State	1500 Mcf gas AF 1020 psi	1802 Mcf gas AF R. P. 912 psi 1 mo.	1000 Mcf gas AF R. P. 880 psi 13 hrs.	1000 Mcf gas AF R. P. 1060 psi 26 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	81	82	83	84	85	86	87	88	89	90
COUNTY Permit Number	ERIE	ERIE 245	ERIE 262	ERIE 210	ERIE 209	ERIE 211	ERIE 226	ERIE	ERIE 228	ERIE 238
NAME OF WELL	Ross 1	M.&[illegible]. Sawdy 1	M.&O. Schmidt 1	R.&C. Schmidt 1	L.&H. Scott 3	G. Spaulding 1	R. Stevens 1	Stevens 2	S. Stewart 1	Summerville 1
OPERATOR	Cayman Corp.	Worldwide Pet. Corp.	Cayman Corp.	Worldwide Pet. Corp.	Worldwide Pet. Corp.	Worldwide Pet. Corp.	Brittan etal.	Platco Drilling Co.	V.H. Simmons	Betz Oil, Inc.
TOWNSHIP	Springfield	Conneaut	Springfield	Conneaut	Conneaut	Conneaut	Conneaut	Conneaut	Springfield	Conneaut
QUADRANGLE	Girard A 296	Girard E 305	Girard B 280	Girard D 260	Girard D 262	Girard D 261	Girard D 265	Girard D 298	Girard A 272	Girard D 293
LATITUDE	15,800 ft. S 42° 00' (PI)	4000 ft. S 41° 55'	12,700 ft. N 41° 55'	11,600 ft. S 41° 55'	13,250 ft. S 41° 50'	13,200 ft. S 41° 55'	2800 ft. S 41° 55'	5900 ft. S 41° 55' (PI)	4800 ft. N 41° 55'	3650 ft. S 41° 55'
LONGITUDE	1500 ft. W 80° 25' (PI)	10,800 ft. E 80° 25'	2800 ft. E 80° 25'	3600 ft. W 80° 25'	11,200 ft. W 80° 25'	5000 ft. W 80° 25'	300 ft. W 80° 25'	1250 ft. W 80° 25' (PI)	6000 ft. E 80° 30'	5700 ft. W 80° 25'
DATE COMPLETED	8-26-66	8-5-66	7-6-66	1-25-66	2-24-66	3-21-66	5-16-66	8-30-66	6-11-66	5-11-66
ELEVATION	748 G	837 G	806 DF	904 DF	945 G	927 DF	944 KB	903 DF	818 G	928 DF
TULLY										
ONONDAGA		1834 -	1668 -	1892 -	1982 -	1948 -	1894 -		1670 -	1870 -
ORISKANY	Gas	2170 - SW@ 2172	1948 - horizon	SW@ 2150	SW@ 2230	SW@ 2220	2112 - 2115 SW@ 2115			
SALINA										
GUELPH - LOCKPORT Black Water		2850 -		2955 -	3035 -	2995 -				
CLINTON IRONDEQUOIT		3040 -	2839 -	3124 -	3199 -	3161 -	3102 -		2882 -	3081 -
MEDINA		perf: 3112, 14, 32, 44	perf: 2882 - 2948	perf: 3173, 81, 3226	perf: 3252, 94, 98	perf: 3253, 63 - 66	perf: 3203 -		perf: 2933 - 62	perf: 3136, 66, 68, 70, 83
QUEENSTON										
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	1832	3250	3082	3296	3382	3333	3330	3311 (PI)	2987	3269
DEEPEST FORMATION REACHED	Oriskany	Power Glen ?	Queenston	Queenston	Queenston	Power Glen	Queenston	Queenston	Power Glen	Medina
RESULT	Gas well - Logs not yet released to State	1200 Mcf gas AF R. P. 880 psi 13 hrs.	1850 Mcf gas AF R. P. 980 psi 72 hrs.	100 Mcf gas AF R. P. 650 psi 72 hrs.	500 Mcf gas AF R. P. 550 psi	700 Mcf gas AF R. P. 850 psi 24 hrs.	3000 Mcf gas AF R. P. 975 psi 14 hrs.	Gas well Logs not yet released to State	1159 Mcf gas AF R. P. 950 psi	2500 Mcf gas AF R. P. 1700 psi Immediately

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	91	92	93	94	95	96	97	98	99	100
COUNTY Permit Number	ERIE 239	ERIE 258	ERIE	ERIE 207	ERIE 222	ERIE 235	ERIE 254	ERIE 266	ERIE 220	ERIE 199
NAME OF WELL	G.H. Taylor - Toms Unit 1	N.W. Taylor 1	Terry 1	H. Thayer 1	H. Thayer 2	C.L. Thomas 2	S. Ulam 1	S. Ulam 2	C.&L. Wade 1	R. Walbridge 1
OPERATOR	Transamerican Pet. Corp.	James Drlg. Co.	V.H. Simmons, Jr.	Midterra Associates, Inc.	Midterra Oil	Betz Oil Co.	Rock Drilling Co.	Conestoga Oil Co.	Midterra Oil Co.	Cayman Corp.
TOWNSHIP	Elk Creek	Conneaut	Springfield	Springfield	Springfield	Springfield	Elk Creek	Elk Creek	Springfield	Springfield
QUADRANGLE	Girard F 300	Girard O 312	Girard A 328	Girard A 245	Girard A 269	Girard A 257	Girard F 317	Girard F 336	Girard A 259	Girard A 251
LATITUDE	10,200 ft. N 41° 50'	10,9[illegible]0 ft. S 41° 55'	22,150 ft. S 42° 00' (PI)	1700 ft. N 41° 55'	3200 ft. N 41° 55'	2300 ft. N 41° 55'	9000 ft. N 41° 50'	9600 ft. N 41° 50'	7900 ft. N 41° 55'	15,500 ft. S 42° 00'
LONGITUDE	1650 ft. E 80° 20'	27[illegible]0 ft. E 80° 30'	15,200 ft. W 80° 25' (PI)	7200 ft. E 80° 30'	8400 ft. E 80° 30'	1800 ft. W 80° 25'	2600 ft. E 80° 20'	4700 ft. E 80° 20'	5000 ft. E 80° 30'	3400 ft. W 80° 25'
DATE COMPLETED	6-22-66	9- 4-66	12-29-66	1-24-66	5-18-66	2-27-66	9-21-66	12-8-66	3-16-66	1-1-66
ELEVATION	1058 KB	9[illegible]9 RF	743 DF	864 DF	868 DF	877 DF	1084 KB	1052 DF	725 KB	746 KB
TULLY										
ONONDAGA	2210 -	1896 -		1720 -	1724 -	1788 -		2220 -	1640 -	1585 -
ORISKANY	25[illegible]0 - SW	SW 2177		2150 -	1984 -				1898 -	1874 - 83
SALINA								2550 -		1971 -
GUELPH-LOCKPORT Block Water	31[illegible]2 -	2915 -						3081 - 3228		2467 -
CLINTON IRONDEQUOIT	33[illegible]2 -	3116		2950 -	2946 -	2998 -	3370 - 3426 -	3347 - 3404 -	2804 -	2721 - 2774 -
MEDINA		3140 - perf: 3204 - 05 21 - 22		perf: 2999 - 3051	perf: 3002, 43	perf: 3082 - 92 3128 - 30	3460 - perf: 3484 - 3543	3438 perf: 3466 - 3519	perf: 2898 - 2902	2804 - perf: 2828 - 2926
QUEENSTON	36[illegible]0 -	3318 -								2970 -
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	3682	3348	3026 (PI)	3126	3069	3247	3610	3579	3120	2999
DEEPEST FORMATION REACHED	Queenston	Queenston	Queenston	Power Glen	Power Glen	Queenston	Power Glen	Power Glen	Queenston	Queenston
RESULT	6750 Mcf gas AF R. P. 1100 psi 72 hrs.	1200 Mcf gas AF R. P. 980 psi 24 hrs.	Abandoned Logs not yet released to State	1520 Mcf gas AF R. P. 875 psi 12 hrs.	1500 Mcf gas AF R. P. 760 psi 60 hrs.	3500 Mcf AF 1800 psi Immediately	5000 Mcf gas AF R. P. 1100 psi 48 hrs.	1250 Mcf gas AF R. P. 750 psi 12 hrs.	1520 Mcf gas AF R. P. 875 psi 12 hrs.	1100 Mcf gas AF R. P. 953 psi 3 days

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	101	102	103	104	105	106	107	108	109	110
COUNTY Permit Number	ERIE	ERIE 192	ERIE	ERIE 232	ERIE 252	ERIE 253	ERIE 276	ERIE 195	ERIE 269	ERIE 268
NAME OF WELL	N.M. Waldron 1	Paul G. Walker 1	Wahring 1	L.B. Waindorf 2	J. Weissenberger 1	N.B. Weldon 2	Wheeler 1	O.&A. Widler 1	O. Wilkenson 1	Wood 1
OPERATOR	Cayman Corp.	Platco Drilling Co.	Platco Drilling Co.	V.N. Simmons, Jr.	Cayman Corp.	Cayman Corp.	Thorsen Oil Co.	Cayman Corp.	Betz Oil Co.	Betz Oil, Inc.
TOWNSHIP	Springfield	Conneaut	Conneaut	Springfield	Springfield	Springfield	Conneaut	Springfield	Conneaut	Conneaut
QUADRANGLE	Girard A 321	Girard E 255	Girard D 277	Girard A 290	Girard A 278	Girard A 281	Girard B 334	Girard A 247	Girard B 344	Girard B 343
LATITUDE	21,100 ft. S 42° 00' (PI)	250 ft. S 41° 55'	4600 ft. S 41° 55' (PI)	3100 ft. N 41° 55'	4800 ft. N 41° 55'	17,900 ft. S 42° 00'	1500 ft. N 41° 55'	2700 ft. S 42° 00'	3300 ft. N 41° 55'	1000 ft. N 41° 55'
LONGITUDE	11,600 ft. W 80° 25' (PI)	2100 ft. E 80° 25'	2850 ft. W 80° 25' (PI)	10,500 ft. W 80° 25'	4000 ft. W 80° 25'	4200 ft. W 80° 25'	11,650 ft. W 80° 20'	10,700 ft. W 80° 25'	13,100 ft. W 80° 20'	2100 ft. E 80° 25'
DATE COMPLETED	11-19-66	2-28-66	7-25-66	7-15-66	6-22-66	6-6-66	10-11-66	2-28-66	12-23-66	12-30-66
ELEVATION	742 DF	882 KB	914 G	860 G	846 DF	755 DF	842 KB	650 KB	850 DF	851 KB
TULLY										
ONONDAGA		1825 -		1740 -		1608 -	1795 -	1382 -	1790 -	1773
ORISKANY		2186 - 2192		2006 -	2018 -			1684? - 1706?	2056? - 78	2046? SW
SALINA								1790 -	2168 -	
GUELPH - LOCKPORT Black Water								2273 -	2670 - 2800 -	2812 -
CLINTON IRONDEQUOIT		3034 -		2950 -	2939 -	2794 -	2999 -	2528 - 2580 -	2932 - 2985 -	2988 -
MEDINA		perf: 3144		perf: 3004, 26, 27, 50, 51, 60	perf: 2993 - 3078		perf: 3050 - 3111	2606 - perf: 2613 - 77	3016 -	3022 - perf: 3034 - 3128
QUEENSTON								2772 -		3190 -
MIDDLE ORDOVICIAN LIMESTONES										
GATESBURG										
TOTAL DEPTH	1864 (PI)	3274	3346 (PI)	3110	3130	3023	3201	2789	3131	3225
DEEPEST FORMATION REACHED	Oriskany	Queenston	Queenston	Power Glen	Queenston ?	Queenston	Queenston ?	Queenston	Power Glen	Queenston
RESULT	Abandoned Logs not yet released to State	1250 Mcf gas AF R. P. 950 psi 12 hrs.	Gas well - Logs not yet available to State	750 Mcf gas AF R. P. 1100 psi 24 hrs.	1350 Mcf gas AF R. P. 970 psi 3 days	1200 Mcf gas AF R. P. 940 psi 72 hrs.	3500 Mcf AF 985 psi	677 Mcf gas AF R. P. 872 psi 4 days	1250 Mcf & 50 AF 850 psi	1500 Mcf AF 735 psi 6 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER		111	112	113	114	115	116	117	118	119	120
COUNTY Permit Number		FAYETTE 53	INDIANA 694	INDIANA 850	JEFFERSON 468P	JEFFERSON 421	JEFFERSON 436	JEFFERSON 429	JEFFERSON 408	JEFFERSON 464	JEFFERSON 431
NAME OF WELL		Hazel M. Ryan 1	O.M. Gibson 1	Robert Stewart 1	Dean Barrett 1	Vada Ballers 2 (C.C. Campbell)	G.A. Haag 3	F.&C. Haines 3	Kingman 1	Punxsutawney Country Club 1	R.&P. Coal Co. 1
OPERATOR		Sun Oil Co.	Delta Drilling Co.	Delta Drilling Co.	Fairman Drilling Co.	T.W. Phillips Gas & Oil Co.	T.W. Phillips Gas & Oil Co.	T.W. Phillips Gas & Oil Co.	Lee E. Minter	Consol Gas Supply Corp.	Consol Gas Supply Corp.
TOWNSHIP		Wharton	Cherry Hill	Cherry Hill	Henderson	Young	Young	Young	Young	Young	Young
QUADRANGLE		Bruceton B 10	Indiana F 28	Indiana F 29	DuBois H 41	Punxsutawney A 50	Punxsutawney A 53	Punxsutawney A 52	Punxsutawney A 47	Punxsutawney A 57	Punxsutawney A 54
LATITUDE		7800 ft. S 39° 45'	6850 ft. S 40° 40'	12,200 ft. S 40° 40'	11,300 ft. N 41° 00'	9400 ft. S 41° 00'	10,500 ft. S 41° 00'	13,750 ft. S 41° 00'	12,950 ft. S 41° 00'	16,950 ft. S 41° 00'	12,000 ft. S 41° 00'
LONGITUDE		6600 ft. E 79° 40'	8700 ft. W 79° 00'	1700 ft. W 79° 00'	9300 ft. E 78° 55'	2200 ft. E 79° 00'	5400 ft. E 79° 00'	300 ft. E 79° 00'	4400 ft. E 79° 00'	1800 ft. E 79° 00'	5400 ft. E 79° 00'
DATE COMPLETED		1-15-66	12-18-66	12-2-66	12-2-66	4-19-66	7-6-66	5-10-66	3-4-66	10-24-66	6-6-66
ELEVATION		1777 KB	1555 DF	1484 KB	1615 KB	1521 DF	1531 KB	1461 DF	1390 DF	1394 DF	1446 DF
TULLY		7210 -	6893 - 6944	7052 -	7065 -	6685 - 6820	6724 - 6866	6655 - 6800	6615 - 6740	6607 - 6740	6648 - 6780
ONONDAGA	LIMESTONE	7696 -	7754 -	7812 -		7268 -	7298 -	7247 -	7181 -	7185 -	7223 -
	CHERT	7716 -	7774	7827 -		7275 -	7315 -	7267 -	7195 -	7199 -	7240 -
ORISKANY		7858 -		7934 - SG, SW		7358 -	7396 - 7417	7345 - 63	7277 - 94	7286 - 7309	7327 -44
HELDERBERG											
SALINA											
GUELPH-LOCKPORT											
CLINTON											
MEDINA											
QUEENSTON											
TOTAL DEPTH		8011	7854	7975	7120	7383	7422	7368	7294	7338	7376
DEEPEST FORMATION REACHED		Shriver ?	Onondaga	Oriskany	Hamilton	Oriskany	Shriver ?	Shriver ?	Shriver	Shriver ?	Shriver ?
RESULT		Dry in Oriskany P B to 3073 completed as shallow well	2000 Mcf AF 4050 psi 48 hrs.	P & A	P & A P B and completed as shallow well	1670 Mcf Nat. 3050 psi 48 hrs.	4000 Mcf Nat. 2900 psi 90 hrs.	5597 Mcf Nat. 3475 psi 60 hrs.	4378 Mcf Nat. 3247 psi 14 hrs.	4355 Mcf Nat. 2814 psi 75 hrs.	2071 Mcf Nat. 2892 psi 24 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	121	122	123	124	125	126	127	128	129	130
COUNTY Permit Number	JEFFERSON 416	JEFFERSON 435	JEFFERSON 460	JEFFERSON 473	JEFFERSON 411	JEFFERSON 422	JEFFERSON 448	JEFFERSON 472	JEFFERSON 465	JEFFERSON 426
NAME OF WELL	R.&P. Coal Co. 2	R.&P. Coal Co. 3	R.&P. Coal Co. 4	Earl Schwartz 1	C.H. Stratliff 1	Charles Yount 1	Wm. B.Drummond 1	David Groves 3	F.&C. Heines 4 (A. Loranzo)	George Harper 1
OPERATOR	T.W. Phillips Gas & Oil Co.	T.W. Phillips Gas & Oil Co.	T.W. Phillips Gas & Oil Co.	Consol Gas Supply Corp.	Consol Gas Supply Corp.	Lee E. Minter	Consol Gas Supply Corp.	J. & J. Enterprises	T.W. Phillips Gas & Oil Co.	J. & J. Enterprises
TOWNSHIP	Young	Young	Young	Young	Young	Young	Young	Perry	Young	Perry
QUADRANGLE	Punxsutawney A 51	Punxsutawney A 55	Punxsutawney A 5[illegible]	Punxsutawney A 58	Punxsutawney A 49	Punxsutawney A 48	Smicksburg C 10	Smicksburg C 15	Smicksburg C 11	Smicksburg C 6
LATITUDE	14,300 ft. S 41° 00'	15,200 ft. S 41° 00'	12,800 ft. S 41° 00'	2400 ft. S 41° 00'	11,300 ft. S 41° 00'	15,200 ft. S 41° 00'	15,600 ft. S 41° 00'	1300 ft. N 40° 55'	14,000 ft. S 41° 00'	20,450 ft. S 41° 00'
LONGITUDE	3500 ft. E 79° 00'	2700 ft. E 79° 00'	2400 ft. E 79° 00'	12,400 ft. W 78° 55'	600 ft. E 79° 00'	650 ft. E 79° 00'	2100 ft. W 79° 00'	14,400 ft. W 79° 00'	1000 ft. W 79° 00'	6250 ft. W 79° 00'
DATE COMPLETED	3-27-66	7-25-66	9-27-66	12-1-66	4-1-66	4-11-66	10-4-66	11-30-66	10-18-66	4-26-66
ELEVATION	1471 KB	1311 DF	1441 DF	1437 DF	1500 DF	1450 DF	1507 DF	1192 KB	1531 DF	1543 KB
TULLY	6680 - 6820	6577 - 6715	6606 - 6751	6575 - 6695	6605 - 6745	6576 - 6709	6598 - 6734	6336 - 6470	6618 - 6763	6665 - 6798
ONONDAGA LIMESTONE	7260 -	7160 -	7174 -	7129 -	7176 -	7146 -	7154 -	6911 -	7193 -	7264 -
ONONDAGA CHERT	7278 -	7180 ?	7192 -	7146 -	7193	7164 -	7184 -	6923 -	7207 -	7283 -
ORISKANY	7355 - 72	7261 -	7291 - 7302	7223 - 45	7278 - 7306	7246 - 67	7257 - 91	7021 - 40	7291 - 7307	7374 -
HELDERBERG										
SALINA										
GUELPH-LOCKPORT										
CLINTON										
MEDINA										
QUEENSTON										
TOTAL DEPTH	7377	7279	7310	7275	7327	7290	7317	7058	7319	7390
DEEPEST FORMATION REACHE	Shriver ?	Oriskany	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver?	Oriskany
RESULT	2494 Mcf Nat. 3250 psi 48 hrs.	8800 Mcf Nat. 2950 psi 17 hrs.	5127 Mcf Nat. 2400 psi 48 hrs.	7504 Mcf AF 3181 psi 161 hrs.	4632 Mcf AF 3246 psi 66 hrs.	7583 Mcf Nat. 3640 psi 35 hrs.	4479 Mcf Nat. 3115 psi 45 hrs.	5100 Mcf Nat. 3675 psi 72 hrs.	4284 Mcf Nat. 2800 psi 48 hrs.	11,300 Mcf Nat. 3960 psi 48 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	131	132	133	134	135	136	137	138	139	140
COUNTY Permit Number	JEFFERSON 450	JEFFERSON 438	JEFFERSON 477	JEFFERSON 471	JEFFERSON 432	JEFFERSON 449	JEFFERSON 434	JEFFERSON 430	JEFFERSON 470	JEFFERSON 474
NAME OF WELL	J.&M. Hetrick 2	Lindsey Coal Co. 1	Lindsey Coal Mining Tr 3 No. 1	Wm. Meneely 2	Paul D. Neal 1	R.&P. Coal Co 3	Dee Sutter 1	James E. Todd 2	J.J. Travis 1	Raymond D. Wood 1
OPERATOR	T.W. Phillips Gas & Oil Co.	Consol Gas Supply Corp.	Consol Gas Supply Corp.	J. & J. Enterprises	Fairman Drilling Co.	Consol Gas Supply Corp.	J. & J. Enterprises	T. W. Phillips Gas & Oil Co.	Consol Gas Supply Corp.	Lee E. Minter
TOWNSHIP	Perry	Young	Perry	Perry	Young	Young	Perry	Perry	Perry	Young
QUADRANGLE	Smicksburg C 14	Smicksburg C 8	Smicksburg C 18	Smicksburg C 13	Smicksburg C 4	Smicksburg C 9	Smicksburg C 5	Smicksburg C 7	Smicksburg C 12	Smicksburg C 16
LATITUDE	26,200 ft. S 41° 00'	20,500 ft. S 41° 00'	23,500 ft. S 41° 00'	4900 ft. N 40° 55'	17,500 ft. S 41° 00'	17,500 ft. S 41° 00'	1600 ft. N 40° 55'	18,600 ft. S 41° 00'	8000 ft. N 40°55'	14,750 ft. S 41° 00'
LONGITUDE	10,600 ft. W 79° 00'	3300 ft. W 79° 00'	10,200 ft. W 79° 00'	11,900 ft. W 79° 00'	1600 ft. W 79° 00'	4000 ft. W 79° 00'	11,200 ft. W 79° 00'	6400 ft. W 79° 00'	7550 ft. W 79° 00'	1600 ft. W 79° 00'
DATE COMPLETED	12-3-66	7-10-66	12-30-66	11-13-66	6-1-66	9-15-66	6-7-66	5-19-66	11-23-66	11-25-66
ELEVATION	1400 KB	1321 DF	1513 DF	1425 DF	1410 KB	1440 DF	1199 DF	1551 DF	1460 DF	1443 KB
TULLY	6545 - 6680	6462 - 6596	6606 - 6736	6560 - 6691	6558 - 6683	6480 - 6610	6420 - 6551	6618 - 6760	6555 - 6645	6517 - 6644
ONONDAGA LIMESTONE	7138 -	7046 -	7173 -	7143 -	7130 -	7046 -	7016 -	7185 -	7120 -	7075 -
ONONDAGA CHERT	7155 -	7076 -	7192 -	7160 -	7144 -	7062 -	7030 -	7205 -	7138 -	7090 -
ORISKANY	7244 - 62	7148 - 68	7276 - 94	7247 - 71	7228 - 51	7151 - 71	7120 - 40	7287 - 7302	7217 - 7237	7176 - 7194
HELDERBERG										
SALINA										
GUELPH-LOCKPORT										
CLINTON										
MEDINA										
QUEENSTON										
TOTAL DEPTH	7272	7196	7319	7311	7280	7205	7165	7307	7265	7232
DEEPEST FORMATION REACHED	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?	Shriver ?
RESULT	4284 Mcf Nat. 3625 psi 22 hrs.	3391 Mcf Nat 3624 psi 23 hrs.	9191 Mcf AF 3202 psi 90 hrs.	15,100 Mcf AF 3721 psi 36 hrs.	6923 Mcf Nat. 3783 psi 48 hrs.	5441 Mcf Nat. 3302 psi 106 hrs.	6288 Mcf AF 3985 psi 71 hrs.	3161 Mcf Nat. 3875 psi 87 hrs.	20,731 Mcf AF 3536 psi 43 hrs.	6750 Mcf AF 2645 psi 72 hrs.

Table 10. *Summarized records of deep wells, Continued*

MAP NUMBER	141	142	143	144	145	146	147	148	149	150	151
COUNTY Permit Number	MC KEAN 3237	MERCER 38	MERCER 38	POTTER 182	POTTER 182	SOMERSET 34	SOMERSET 35P	WARREN	WESTMORELAND 472	WESTMORELAND	ERIE 217
NAME OF WELL	Knox and South Looker 1	J.V. Johnson 1	Glen W. Snyder 1	Harold House 1	Pa. Dept. Forest & Waters Tc129 1	A.A. Dupree 1	James Hoffman 1	The Collins Co. 1	L.G. Helnes 1	F.H. Sloan 1	Edith Adams 2
OPERATOR	Nunglville & Setterwhite	United Nat. Gas Co.	United Nat. Gas Co.	J.D. Nadolski	Consol Gas Supply Corp.	The Peoples Nat. Gas Co.	Felmont Oil Corp.	Felmont Oil Corp.	The Peoples Nat. Gas Co.	Fox,Coen and Sloan	Pa. Gas Co. 1612
TOWNSHIP	Otto	Sandy Lake	Worth	Sweden	Stewardson	Middle Creek	Shade	Elk	Salem	Franklin	Wayne
QUADRANGLE	Bradford C 8	Stoneboro I 10	Stoneboro I 9	Genesee N 148	Renovo West C 202	Donegal I 32	Windber E 3	Kinzua A 15	Greensburg F 7	Greensburg A 6	Corry A 29
LATITUDE	50 ft. N 41° 55'	12,600 ft. S 41° 20'	5900 ft. N 41° 15'	13,200 ft. S 41° 50'	3900 ft. S 41° 30'	6100 ft. N 40°00'	600 ft. N 40° 05'	14,600 ft. S 42° 00'	15,200 ft. S 40° 25'	19,300 ft. S 40° 30'	13,300 ft. S 42° 00'
LONGITUDE	2700 ft. W 78° 30'	2900 ft. E 80° 05'	11,000 ft. E 80° 05'	7000 ft. E 77° 55'	6500 ft. W 77° 45'	13,900 ft. W 79° 15'	4100 ft. E 78° 55'	13,300 ft. W 78° 55'	6300 ft. E 79° 35'	5200 ft. W 79° 40'	5800 ft. E 79° 45'
DATE COMPLETED	10-26-66	10-3-66	11-1-66	1-29-66	9-29-66	8-3-66	9-15-66	2-15-66	9-3-66	11-12-66	10-14-65
ELEVATION	1762 DF	1587 KB	1468 DF	2276 DF	1867 DF	2775 KB	2364 KB	1699 DF	1391	1062 RF	1735 G
TULLY		4037 - 87	3914 - 61	4618 ? -	5545 - 5630		7629 -	3564 - 91	6682 -	6713 - 6839	2857 -
ONONDAGA — LIMESTONE		4210 -	4217 -		6339 -	7940	see below	3880 -	7384 -	7152 -	3103 -
ONONDAGA — CHERT						7960			7395 -	7169 -	
ORISKANY		4335 - 42	4242 - 47		6369 -	8102 -	9085 -	3964 ? - SW	7561 - 81	7333	
HELDERBERG							Onondaga folded &	3969 ?			
SALINA					No tops below Oriskany		faulted - limestone: 8663 -				4070 - 80
GUELPH - LOCKPORT			perf: 5341 - 70		released by operator		8945 - 8972 -				4262 -
CLINTON							chert: 8705 - 8895 - 9010 -				
MEDINA		5880 ? -			perf. zones 15,306 - 16,716						
QUEENSTON		6074 -									
TOTAL DEPTH	4655	6140	5803	4935	18,834	8205	9194	4000	7675	7400	4469
DEEPEST FORMATION REACHED	Helderberg	Queenston	Grimsby ?	Hamilton	Upper or Middle Cambrian	Oriskany	Oriskany	Helderberg	Helderberg	Helderberg	Whirlpool
RESULT	Abandoned - Logs not yet released to State	P & A	29 Mcf AF 1490 psi 140 hrs.	P & A Old well drilled deeper	PB to 6475 for storage well	5000 Mcf AF 3320 psi 144 hrs.	P & A Not frac'd	P & A	P & A	300 Mcf AF 3100 psi 7 days	Drilled for Gas storage

Table 11.—*Deep well samples collected 1965, 1966*

COUNTY *Quad. & No.*	*Operator*	*Well Name*	*Total Depth*	*Year Compl.*	*Sample Interval*	*Deepest Formation Sampled*
BEDFORD						
Bedford 3	Kerr-McGee Oil Ind.	Schellsburg Unit #1	11,850	65	50–11,850	Mines ? Dol.
CAMBRIA						
Johnstown 4	T. W. Phillips Gas & Oil	Maude Bole #1	7,821	65	7,695–7,805	Oriskany
CLEARFIELD						
Barnesboro 16	N. Y. State Nat. Gas #N963	L. Leamer #1	8,353	65	17–8,353	Helderberg
Penfield 148	N. Y. State Nat. Gas #677	Pa. Tract 65 #1	7,320	58	50–1,010	Upper Devonian
Penfield 280	Fairman Drlg.	Mary Bailey #1	7,595	64	180–7,595	Helderberg
CRAWFORD						
Linesville	Summit Drlg.	J. W. Fleming #1	4,194	66	2,664–3,801	Lockport
ERIE						
Cambridge Sprs. 19	Sunset Int. Pet. Corp.	Mathiewson #1	3,783	65	0–3,779	Queenston
Cambridge Sprs. 20	Sunset Int. Pet. Corp.	Weaver #1	3,768	65	0–3,761	Queenston
Corry 27	Pa. Gas Co. #1609	M. Follette #4	4,491	65	330–4,491	Whirlpool
Girard 38	Worldwide Pet.	Barney #1	2,964	60	2,820–2,964	Medina
Girard 143	Pa. Gas Co.	Lupean #1	3,526	64	2,018–3,523	Queenston

TABLE 11

FAYETTE						
Uniontown 41	Snee & Eberly	Leonard #1	7,920	65	80–7,920	Keyser
FULTON						
Needmore 1	Sun Oil Co.	E. Hill #1	9,922	65	50–9,776	Oriskany
Paw Paw 5	Manufacturers Lgt. & Ht.	Flinn #1	7,313	65	30–7,310	Hamilton
McKEAN						
Bradford 5	Minard Run Oil Co.	Minard Run #1	11,891	62	60–11,891	Potsdam
TIOGA						
Antrim 15	Cities Service	Cobb #A1	5,480	65	50–5,475	Helderberg
WAYNE						
Honesdale 2	Humble Oil & Refining	Hudson Realty #1	7,443	65	0–7,420	Hamilton?